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Original Communications.

SEDATIVES, WITH SPECIAL REFERENCE TO THE BROMIDES.

So convinced are we that these compounds are often used with evil results because of a failure to recognize their power for harm that we have asked several physicians of wide experience in the treatment of the insane and of epileptics to express their views as to the limitations of sedatives in daily practice in these classes of cases. The following letters are of special interest in this connection, since they embody the results of wide experience:

BY JOHN B. CHAPIN, M.D.,
Physician to the Pennsylvania Hospital for the Insane, Philadelphia.

In reply to your communication the writer will state that in 1891 he presented to the Association of Medical Officers of Hospitals for the Insane a communication on the use and abuse of hypnotic drugs, embracing a synopsis of several cases admitted to the Pennsylvania Hospital for the Insane. In that paper an attempt was made to show that excessive dosage of drugs of this character was so often followed by injurious and serious results that it amounted to an abuse. A reference to clinical notes in a number of cases furnishes material for a further contribution of added experience not included in that of an earlier period, confirming the opinion expressed in your communication of some years ago that "the use of nervous sedatives and bromides is very much abused." Some of the evidence that led to that may

be derived from a brief synopsis of several typical cases.

CASE A.—Delirium and mania of three weeks' duration; mental condition stuporous; confused; utterly non-responsive. Seventeen prescriptions were brought with the patient, the druggist indicating that they had been renewed over and over again. From these it appeared that very liberal doses of bromide of potassium, chloral, tincture of belladonna, nux vomica, and digitalis had been administered, alone and in combination.

CASE B.—Brought from a general hospital in an ambulance. Said to have been insane ten days. Unable to stand. Tongue dry; sordes on teeth; unable to articulate. Mentally in state of complete hebetude. Absence of mental reflexes. Leeches had been applied to head, followed by blisters. Had been given freely bromides, cannabis indica, hyoscyamus, chloral, bichloride of mercury, atropine, and morphine.

CASE C.—Had been acutely insane ten days. Had been kept quiet by doses of hyoscine and morphine administered every two to four hours. Pupils widely dilated and immovable. Intellection sluggish. Feeble and confined to bed.

CASE D.—Brought from a neighboring city, where he had been treated for alcoholism. Was in a state of acute delirium. Had been noisy. From the clinical record furnished had been administered hyoscine, bromide of sodium, glonoin, Magendie's solution of morphine, strophanthus—all in large doses.

CASE E.—Patient transferred from a general hospital in New York, where he had been arrested in a state of maniacal violence with delirium. Was delirious on admission and seemed moribund, the friends desiring the offices of a priest. The symptoms all pointed to the results of excessive doses of hypnotic drugs.

During ten years eighteen cases have been received in this hospital with such marked symptoms that they were recognized as suffering from excessive hypnotic drug medication. All had suffered from nervous and mental symptoms that warranted or rendered necessary legal certification for admission to a hospital for the insane. Thirty-six physicians had made the certificates, and no exception or criticism could be entered as to the correctness of their judgment. Physicians in attendance on brief examinations made a diagnosis of *paresis, ataxia, meningitis, sclerosis, dementia, "softening of the brain"*—all of which were founded upon a presumption, but were erroneous. The disordered mental symptoms had been greatly aggravated and masked in every case by the administration of hypnotic drugs in excessive doses, and the physical as well as psychical condition of the patients were deranged and seriously jeopardized by an added toxicosis. The symptoms were well calculated to mislead. The irregular, ataxic gait, the speech disturbance amounting to actual inability to articulate, the dilated, contracted, or irregular pupils, the hebetude showing a loss of ability to perform any mental operation, are symptoms that ordinarily indicate serious lesions of the brain. Other symptoms were also present, as delirium in an acute form attended with hallucinations of one or all of the senses. On the other hand, the symptoms of serious import appeared out of place and not in accordance with the usual order and history of the development of the grave affections they simulated. They were present at the early stages, and increased with the doses of hypnotic drugs. The hallucinations were sometimes evidently induced and aggravated by drugs, as chloral and morphine. The mental hebetude and mental dulness simulating dementia were produced by bromides administered in excessive doses. In two cases more than four hundred and eighty grains were said to have been taken daily, and in one case for a year. The bromides and chloral (the latter being administered to the extent of one hundred and fifty grains) caused paralysis of speech, dilatation of pupils, and difficult respiration, showing that even vital centers were affected. Hyoscine frequently administered caused such incoördination as to suggest sudden ataxia.

The physical signs are an aid sometimes in distinguishing clearly the results of prolonged use of some drug in common use. The presence of acne, the natural color of the skin supplanted by an ashen shade, the enlarged, pale, heavily coated tongue, protruded with difficulty, the feeble action of

the heart, a dull eye with abnormal pupils, and a changed facial expression, must attract and excite suspicion. The abdomen is often tumid, the bowels constipated, and urine scanty to a degree to suggest a further cause of the apparent toxic condition of the patient.

It has been suggested that in attempting to quiet an insomnious or noisy patient in private or in general hospital care there was an explanation of the liberal use of hypnotic drugs, and their continued use until decided effects are produced.

Of the treatment, it may be said that the first step has been to stop the use of all hypnotic drugs, and next to eliminate the toxic conditions by means of medicines operating upon the liver, kidneys, and skin, and restore their functions to a normal condition. The administration of nutritious food may be commenced at once, and persistently continued. The elimination of the bromides and their toxic effects is only accomplished, if at all, in several months.

While the purpose of this communication has been to show that abuses may and do occur in the use of hypnotic drugs, and that their effects may be recognized, there is still a proper use of these drugs which is beyond the scope of this letter.

By Robt. H. Chase, M.D.,
Physician in Chief, Friends Asylum for the Insane, Philadelphia.

Past all question the Gazette has done good service in calling attention to the pernicious custom in private practice of saturating nervous and insane patients with large and frequent doses of sedative drugs. As an echo of this collective investigation numerous comments of a favorable character have come to the writer's notice, even in one instance from a region so remote as Texas. If this be true of one of the contributors, what must be the impression it has exerted upon the wide circle of its influence in the profession at large. It is not difficult to understand how drugs of this nature administered too copiously in the practice of the general physician may become baneful. When it is remembered that the patient is constantly under the eye and exposed to the ardent sympathy of the family, and that the physician necessarily is subjected to great pressure to give relief and that speedily, is it any wonder that he falls many times into the hazardous expedient of resorting to the magic spell of these remedies, which for a season have the desired effect of inducing calm, but a calm foolishly obtained in the rising discord of shattered nerves? If the physician, in the exercise of a sound judgment, is not able to control the conditions at home, it were better by far that the patient should be sent from home to a place the environment of which would be favorable to the enforcement of a more rational treatment.

The inquiry in the present instance chiefly seeks a statement of the proper measures to be employed in the treatment of these cases, in order that the entanglement of this great abuse, which proves so often an opprobrium to the profession of medicine, may be avoided. In general terms it may be confidently asserted that the measures usually termed moral or hygienic should in large measure be substituted for drugs, only resorting to these powerful medicaments as the mariner resorts to his sheet-anchor during the storm. As the previous life of the nervous patient is in large part responsible for his impaired health, the causes that have brought on his misfortune must be closely examined and the dangerous course brought promptly to a pause. By attention to healthful means, and by a judicious regulation of the habits and life of the patient, the general tone of the system can be built up, and much can be done to bring about favorable results. These means imply a careful oversight and control of every detail of the patient's life; work, both mental and physical, reduced; the removal of all stress and strain; abstemious habits of living; the use of mild systematic exercise; early hours and watchful care of sleep; a suitable diet which best meets the views of the individual physician; very careful attention to the state of the alimentary tract; the application of massage and electricity in some of its forms; intelligent recourse to hydrotherapy, combined with the rest cure in full or partially to meet the requirements of the case. These and other resources which will suggest themselves readily to the intelligent practitioner may

be used with great advantage in restoring bodily functions and impaired health in the subjects of mental and nervous diseases.

It is not to be understood that drugs are to be altogether discarded, but they should be used sparingly and with discretion for brief periods of time, just as we use them as bridges in acute disease to span the chasm of danger before the crisis. The physician must not yield to the discouraging exigencies in the patient's surroundings, but gently and firmly impel obedience to his plan. If this cannot judiciously be done in the patient's home, then must be met the weighty responsibility of caring for the patient outside of his own home, at some place where hygienic measures and treatment denominated moral can find effective enforcement.

By William P. Spratling, M.D.,
Medical Superintendent of the Craig Colony for Epileptics, Sonyea, N. Y.

Notwithstanding the fact that the bromide salts have enjoyed the prestige of almost universal use in the treatment of epilepsy for half a century or more, it has long been my conviction that, used as they not infrequently are, they very often do more harm than they do good.

The action on the human economy of the bromide salts is essentially the same for them all, what differences there are being slight; so that while we shall speak of them collectively, we have more specific reference to the one most frequently used in epilepsy—the bromide of potassium.

Physiological Action.—In order that we may better understand how the bromides are abused in the treatment of epilepsy, we must first briefly note the ways in which they act.

Eminent authorities, among them Wood, Hare, Brunton, Ringer, and others, not only agree in general, but we may say specifically, as to what their action is, the chief points of which are summarized in the following:

On the nervous system they act as distinct motor depressants, lessening at the same time the activity of the intellectual centers. When pushed to an extreme degree they produce apathy, listlessness, a total lack of interest in surroundings, a dull, sodden facial expression, and, if carried still further, a mental condition not unlike that of acute or primary dementia—a condition from which the patient usually makes a good recovery when the excessive use of the drug is discontinued. If pushed too far, the patient may die from acute bromide poisoning, as we know happened in the case of a boy whose parents gave him too frequent doses of a patent nostrum, the essential ingredient of which (as with the bulk of such things) was the bromide of potassium. It also exerts a sedative action on the spinal cord, lessening reflex excitability in this way.

On the circulation it causes at first a fall in arterial pressure. If given in toxic doses it arrests the heart in diastole, while its long-continued use results in a weakened and irritable condition of the heart, and a general impairment of the circulation.

On the respiration, when given in ordinary doses, it produces but little effect; given in larger doses it acts as a depressant.

On the alimentary canal it often acts disastrously. It irritates the mucous membrane and interferes with the reflex activity of the stomach in a way to check the normal secretion of gastric juice, which necessarily impairs digestion.

It causes constipation, heavy coating of the tongue, and foul breath; produces a bad taste and a pasty feeling in the mouth, causes a loss of appetite, and not infrequently nausea and diarrhea.

On nutrition it also acts unfavorably in some cases by lessening metabolic changes through depressing the nervous system. It tends, through the nutritional disturbances it creates, to produce anemia.

On the temperature, in ordinary doses, it has no effect; in larger doses it lowers the heat of the body by depressing the heart's action and possibly contracting the arteries, a fact apparently established through the experiments of Brown-Sequard, Meuriot, and Amory.[1]

Its effects on the skin in causing acne—wide-spread, unsightly eruptions known as bromism—are too well known through casual observation to require further de-

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[1] Ringer's Therapeutics, 1886, p. 147.

scription in this connection. It is eliminated very slowly and escapes unchanged, being found in the secretions, including the sweat, urine, tears, semen, milk, and feces.

According to Hare,[1] "Tissue waste is decreased when the economy is under the influence of the bromides;" a statement this distinguished writer evidently did not mean to apply to all cases. Some patients may take the bromides in good large doses (30 to 40 grains t. i. d.) for a long time without interference with the processes of nutrition; but it has been our experience that unless care is exercised to combat the mildly poisonous effects of the drug when so given, the patient will lose in weight.

We do not agree that the bromides tend to the conservation of tissue; we feel that the opposite, under ordinary conditions and when the drug is used alone, is more often the case. This opinion is based on a daily observation of its use in several hundred cases during many years, and not on any particular scientific investigation made to determine the point.

Therapeutic Indications for the Use of the Drug.—Hare[2] concisely sums up the therapeutic uses of the drug as generally accepted when he says: "In a word it may be said that the bromide of potassium is to be used when *overexcitement of nervous protoplasm* is present, but never when nervous symptoms are due to depression."

Its use in the treatment of all forms of epilepsy is approved by therapeutists and neurologists generally, except in the epilepsies that degrade the psychic life without direct involvement of the physical.

Especial caution is enjoined against giving it in so-called psychical epileptic equivalent states. Its use should be restricted to the forms of the disease in which *motor* irritability is more marked than psychic irritability, and in which the disease is not due to gross organic lesions.

Its Abuse in Epilepsy.—I hold that its effects on the heart, on respiration, on the gastrointestinal canal, to some extent on the skin, and especially on nutrition, are five points against its use in epilepsy, in contradistinction to the one point in favor of its use in which it lessens the *irritability of nervous protoplasm.* I do not go so far as to deny that it has value in the treatment of epilepsy. On the contrary, I think it has a place of great importance, but I think that on account of the illogical manner in which it is often administered it may in some cases do as much harm as good.

I am not prepared to say that the bromides alone can cure epilepsy, but I am prepared to say that I have never seen such a case. On the other hand, when judiciously administered, I have seen the drug act favorably by *suppressing* epileptic phenomena, while more lasting, more intrinsically valuable forms of treatment were having time to produce changes for good of a permanent nature. Through lessening irritability, through repressing threatened excessive nervous "explosions," or preventing the "snapping of restraint," the loss of inhibition, the bromides do their most beneficial work.

I have often felt that more epileptics would die of status epilepticus if they were not kept sufficiently under the influence of the drug to hold the seizures below the point of status invasion. But in these same cases the drug could not be carried further and so produce a cure. To the extent they were valuable, they acted like a piece of paper lying in a current of air—remove the weight and the paper is blown away; but when it is replaced the current is still blowing, though powerless to disturb the paper.

As a rule, the bromides, in my opinion, are given in larger doses than is required. Twenty years ago at the German Colony for Epileptics at Bielefeld, it was the practice, I was told, to give the bromides in doses of 40 to 60 grains, and even more, three times a day. Now it is the rule to give less than half that, while the results are better.

The following case from the *Craig Colony Bulletin* is an illustration of this point:

"V. S., a man, came to the Colony early in February, 1896, when he was twenty-eight years old, with a very clear history of having had epilepsy since he was nine or ten—a period of seventeen or eighteen years.

"Before the opening of the Colony he had been treated in two State hospitals for

[1] Practical Therapeutics, 1900, p. 107.
[2] *Op. cit.*

the insane (there being at that time no other place to which epileptics could be sent), and had been discharged from them both as hopeless—incurable.

"During the seventeen or eighteen years of his illness he had averaged 115 to 125 attacks each month, about 1500 a year, or a grand total of more than 25,000 during the seventeen or eighteen years.

"On his admission it was found that, irrespective of the original cause in this case, the effects of so many seizures had left physical traces we thought at first it might be impossible to remove. But he was cured completely in two and one-half years.

"In view of our belief that the excessive and indiscriminate use of the bromides in epilepsy sometimes does more harm than good, it is of interest to note the use of this drug in this case. For years before, and at the time of his admission to the Colony, he had been getting forty grains of the bromide of potassium three times a day, this being decreased at the Colony as follows:

February	30 grs. t. i. d.
March	20 grs. t. i. d.
April	15 grs. t. i. d.
May	7 grs. t. i. d.
June	same
July	same
August	same
September	5 grs. t. i. d.

Making fifteen grains a day only he was getting at this time, instead of 120, which he was getting when he came to the Colony."

Its Rational Administration in Epilepsy.—Modern therapy, combined with greater enlightenment on the entire subject of the treatment of nervous diseases, has taught us to administer the bromides in a way to accomplish greater good in some cases and to do less harm in others.

It is always well to begin with small doses at first—10 to 15 grains t. i. d. for an adult is ample—and watch its effects very carefully. If this amount is well borne by the patient and without any perceptible decrease in the frequency and severity of the seizures, it may be increased to 20 or 25 grains t. i. d.

Bromide acne can sometimes be prevented through steaming and massaging the face and body, through baths, and the internal use of arsenic and sulphur, not forgetting to keep the emunctories in active condition, and the digestion in good order.

Some three years ago Toulous conceived the plan of withdrawing all salt from the patient's food and salting it with the bromides, preferably the bromide of sodium—the hypochlorization method it is called. The idea is to replace the chlorine derived from the salt and required by the tissues (the latter being better appropriated in the absence of the former) with bromine. Given in this way, 20 grains of the bromides is as valuable as 30 to 40 under the old method.

Another substitute is the use of organic bromine in combination with the oil of sesame, from which an emulsion is made that is well borne by the digestive system, being especially valuable in mild cases in which there is lack of stamina, for it is a reconstructor as well, being especially valuable in feeble and asthenic cases. A good formula for this is as follows:

℞ Bromipin, iv oz.;
Syr. simplex, iv oz.;
Spts. menthæ piperitæ, iv dr.;
Mucil. acaciæ, ad q. s. fiat, xvj oz.

The dose is from one to three tablespoonfuls an hour after each meal. This prescription is well borne by the patient; it does not cause the bromic acne, upset the gastrointestinal canal, nor produce the mental stupor common to the bromide salts.

But before prescribing for any epileptic, *the type* of his disease should be fully considered. If he has reflex convulsions, due to some local irritation, it is useless to suppress reflex activity with the bromides without removing the cause. It is likewise useless, as a rule, to put cases of epilepsy due to trauma on the bromides; while above all rests the importance of controlling the patient's diet, which needs to be regulated on individual requirements, and based almost exclusively on the use of breadstuffs, fruits, cereals, milk, butter, and eggs.

We are not yet, in my opinion, well enough aware of the part played by nutritional disorders in the production of epilepsy.

I have not mentioned other drugs useful in epilepsy like the bromides, but which possess none of the faults of these.

AN OPHTHALMIC CLINIC IN THE HOSPITAL OF THE UNIVERSITY OF PENNSYLVANIA.

By G. E. de Schweinitz, A.M., M.D.,
Professor of Ophthalmology.

Gentlemen—The first two cases to which your attention is directed this morning illustrate therapeutic measures on the side of conservative surgery—measures, in other words, which may in selected cases be undertaken to attempt to save badly injured eyes and avoid enucleation or one of its substitutes.

Case I.—*Metallic Foreign Body in the Vitreous; Infected Wound of Entrance; Extraction of the Foreign Body with Magnet; Packing the Anterior Chamber with Iodoform Rods.*—This man, aged fifty-five, was struck in the right eye one week ago with a small piece of steel while he was working in a blacksmith's shop. For several days he depended upon domestic medication, which so far as I could ascertain consisted in the application of poultices, and after the eye was seriously inflamed and well-nigh disorganized, he came under the care of Dr. Alexander R. Craig, of Columbia, who, suspecting the presence of a foregin body within the ocular coats, sent him to the hospital.

Examination revealed the following conditions: An irregular cut with infiltrated and infected edges near the center of the cornea, partly closed with lymph and coagulated vitreous, the iris discolored and thickened, and a small quantity of pus in the bottom of the anterior chamber. The lens as far as could be seen was cataractous.

Although the outlook was discouraging, the following methods were employed: The extension point of a Sweet magnet was gradually approached to the center of the cornea, and before it came in contact with this membrane a piece of steel came forward from the lower and inner portion of the vitreous into the anterior chamber, from which it was readily extracted. This fragment was 4 millimeters in length and 2 millimeters in width. The purulent collection in the anterior chamber was then removed and this chamber irrigated with an ordinary physiological salt solution. Iodoform was dusted upon the surface of the eye, the patient put to bed, iced compresses kept constantly in contact with the closed lids, and calomel administered in frequently repeated small doses, a twelfth of a grain every hour, until decided action on the bowels made it necessary to discontinue the remedy.

The following morning there was a slight reaccumulation of purulent material in the anterior chamber, but there was distinct subsidence of the previously existing edema of the bulbar conjunctiva. The corneal wound was reopened and the lens, grumous and soft, extracted, and three small rods of iodoform inserted into the anterior chamber. This iodoform is now visible in the form of the yellowish material which you see when I uncover the eye.

The treatment of infected wounds of the eye by means of iodoform introduced directly into the anterior chamber, and in some instances into the vitreous chamber itself, was suggested by Haab, Ostwalt, and other surgeons, and has in the hands of the first named surgeon proved of great service, and has been the means of saving eyes which in former times would have certainly come to enucleation. Whether we shall ultimately succeed in preventing extension of the infective process I am unable to say at the present time, but certainly the indications are that while the eye will be sightless, it will to a working man be of much more service and less troublesome than a glass one. At all events, panophthalmitis has not supervened, and the conservative measures thus far adopted have checked apparently the process of infection.[1]

Case II.—*Lacerated Wound of the Cornea, Iris, and Lens; Escape of Vitreous; Suture of Cornea.*—This patient, aged about thirty, while chopping down a tree, was struck in the right eye with a ragged chip of wood. One week later he came to the hospital, and examination revealed the following conditions: There was an irregular wound of the cornea extending entirely across its face in the general direction of the horizontal diameter. Into the outer end of this wound

[1]Complete healing with a slightly quadrate ball was the ultimate result. An exactly similar procedure in another similar case was equally successful.

the iris was prolapsed, while at the inner end there was a mass of tissue protruding, partly iris and partly vitreous. After twenty-four hours of a treatment which consisted of the internal administration of calomel, followed by large doses of salicylate of sodium and continuous iced compresses, the patient was etherized, the wound in the cornea opened through its entire length, the incarcerated iris tissue at the outer side removed, as far as possible, and the mass at the inner cornea, which proved to be a discolored bead of vitreous, trimmed away. Following this procedure there was some further escape of vitreous. The area of operation was thoroughly irrigated with warm physiological salt solution, and a quantity of this fluid introduced within the vitreous chamber to compensate for the loss of its contents. Two fine silk threads were then introduced directly through the lips of the corneal wound and tied in the ordinary manner, a procedure which closed the wound and prevented further escape of vitreous. The patient was then sent to bed, iced compresses continued for two days, and calomel again administered in small doses. There was practically no reaction—indeed, the previous congestion of the eyeball materially lessened—and at the present time, nearly ten days after the operation and more than two weeks after the original injury, the eyeball is almost free from congestion, the wound has united, the iris is incarcerated at one end, but the anterior chamber is partially formed, and the cornea, except in the region of the wound, clear. Pain and irritation have practically disappeared, and there are no signs of disturbance of vision in the fellow eye.

It is always a matter of grave consideration how far one may carry on the conservative treatment of an eye wounded in this manner, because, as you know, such an eye is liable to produce so-called sympathetic ophthalmitis—that is, to cause iritis or uveitis in the opposite eye. Under certain circumstances such conservative measures would hardly be justifiable. It is usually believed, for example, and I think with justice, that enucleation or one of its substitutes should be performed on an eye with a wound so situated that it involves the ciliary region and so extensive that it has destroyed sight immediately, or to make its ultimate destruction by inflammation of the iris and ciliary body reasonably certain. The same rule applies to an eye wounded in this region when inflammation has already begun, or when a foreign body is contained within the eye and cannot be removed. If, however, the foreign body can be extracted, if the inflammatory process can be controlled, and if the patient is under constant observation, conservative measures may with caution be tried, and many an eye, such as this one, which in former days would have been promptly enucleated may be saved. The point, however, to bear in mind is that such patients should not be allowed to pass from observation until all danger from sympathetic trouble has passed. If they cannot be kept under observation, then it is safer to enucleate.

In addition to the measures for preserving an eye under these circumstances which I have already detailed, and others to which I shall presently refer, I believe that the administration of mercury is most important. I have usually employed calomel, but have no doubt, as Schirmer has recently advocated in an admirable paper on this subject, that inunctions of mercury in robust subjects would serve an equally good purpose, and he has given a number of instances in which the most satisfactory results have followed the use of this drug in this manner, in addition to the proper surgical procedures.

Sometimes instead of introducing corneal sutures, as I did in the present case, the wound may be closed and infection prevented by covering it with conjunctival flaps. Long ago it was recommended by Gamo Pinto that wounds of the corneoscleral junction, or apertures occasioned by perforating ulcers, should be covered with conjunctival flaps taken from the bulbar conjunctiva, twice as large as the original opening, into which they were gently inserted with a probe. I have adopted this method after perforating ulcers on a number of occasions with very satisfactory results, and know of no reason why it should not be applied after wounds in this region. It would not be applicable, however, to so extensive a wound, crossing, as this one did, the entire corneal surface.

De Wecker advised the following method for closing large wounds of the cornea: From the corneal limbus the con-

junctiva is dissected to a point beyond the attachment of the recti muscles. A suture is then passed in and out near its edge, which when tightened draws the conjunctiva over the cornea, which it entirely covers. This conjunctival flap remains in place until the cornea has healed, when it may be dissected loose. It does not become adherent to the cornea itself, but only to the line of the wound. In Dr. De Wecker's clinic in Paris I have seen admirable results from this procedure.

Kuhnt also has devised a special method of covering corneal wounds with conjunctival flaps, and indeed is enthusiastic in the employment of this method, not only in wounds of the cornea, but in perforations which have resulted from ulcers and corneal fistulas.

CASE III.—*Acute Violent Delirium after Cataract Extraction.*—The next patient illustrates a complication sometimes witnessed after the extraction of cataract. His history is as follows: For a number of years he has had slowly growing cataracts, which began in the form of the so-called nuclear opacities. In order to facilitate the extraction of an unripe cataract and temporarily to improve vision, more than a year ago I performed iridectomy on each eye. At the last clinic the right cataract, although it was not completely ripe, was readily extracted. No complication of any kind occurred until about thirty hours later, when the resident physician, Dr. Nesbet, informed me that the patient was delirious, the delirium having begun quite suddenly, with hallucinations of persecution. Within an hour this delirium gave place to most violent manifestations simulating acute mania, the patient fighting and struggling and screaming incoherent sentences at the top of his voice. With much difficulty he was secured with suitably padded cuffs, and a sixth of a grain of morphine administered, followed about an hour and a half later, inasmuch as it produced no effect, by an eighth of a grain of the same drug. As the delirium continued in exaggerated degree, one-one-hundredth of a grain of hyoscine was given hypodermically. Within half an hour the patient was quiet and gradually sank into a deep sleep. For some hours there was marked diminution in the number of respirations, which fell as low as eight per minute. At the expiration of about ten hours he awoke, weak and depressed, but entirely free from mental disturbance. The urine contained albumin and granular casts; indeed, this condition of the urine had been known for some time, as for the past year albumin had been present. His recovery, as you see, has been complete; the operated eye has healed perfectly, and his visual acuity is excellent.

Mental disturbance after operations upon the eye, particularly after the extraction of cataract, is not very uncommon, and, as in this patient, usually manifests itself during the evening of the second or third day after the operation. The degree of mental disturbance varies greatly. Sometimes it appears merely as an exceedingly temporary confusion of ideas, and sometimes as a violent delirium, associated with aggravated hallucinations.

Naturally, the etiology of this condition has attracted a great deal of attention, and all manner of theories have been advanced to explain it. It has been suggested that the disordered cerebration depends upon a special predisposition; or perhaps that the patient has been mentally unbalanced before the operation, and that the operation has simply been an exciting cause; or, to use Parinaud's phraseology, the condition depends upon extreme preoccupation of the patient for the days preceding the operation—that is, although apparently calm the patient really is in a state of suppressed excitement, which excitement liberates itself in this explosive manner after the operation is completed and he has been retired to a darkened room with bandaged eyes. Indeed, bandaging of the eyes itself has been supposed to cause the delirium, because it has been noted that in some instances immediate relief followed when the bandage was removed from the unoperated eye, thus permitting the patient to come in touch with his surroundings. Again, the delirium has been supposed to be due to the administration of drugs prior to the operation, and particularly to the instillation of atropine solution in the operated eye. Restriction of diet, alteration in the diet, the withdrawal of stimulants to which the patient has been accustomed, and the like, have all been brought forward as etiological fac-

tors; and finally it has been maintained, and it seems to me with a good deal of weight, particularly by Fromaget, that the delirium is due to an autoinfection depending upon uremia, or upon the absorption of toxins from the intestine.

It is evident that not one cause can explain all of the cases. I am quite sure that I have seen delirium follow cataract extraction as the result of the bandage, and seen it disappear when the bandage was removed. I also feel sure that in some cases autointoxication explains the mental disturbance, but am not prepared to say that any or all of the other causes may not be operative. It should be remembered that occasionally cases beginning merely as confusion of ideas may be prolonged into a form of dementia which will last for months. An instance of this character occurred in my wards in the Philadelphia Hospital some years ago. The patient ultimately recovered, with perfect healing of the eye from which the cataract was removed.

The immediate treatment of these cases is the one to which I have already referred, and the drug which most frequently does good is hyoscine, although, as you know, it is not always happy in its results. Sometimes morphine may be indicated, but it must be given with caution, particularly if, as in this patient, there is chronic nephritis. Dr. Dercum informs me that paraldehyde acts favorably, although it would have been difficult to administer to the patient before you during the height of his delirium, as swallowing was well-nigh impossible.

CASE IV.—*Leucoma of the Cornea; Administration of Thiosinamin with Negative Results; Optical Iridectomy and Tattooing the Margin of the Opacity.*—The next patient, a man of thirty-five years, more than a year ago was severely injured in a premature explosion of blasting powder. One eye was entirely disorganized by the effect of the blast, and the shrunken stump I enucleated twelve months ago. The other eye was seriously injured, and when I saw him contained a large opacity of the cornea, the result of a partially healed ulcer. Under treatment the inflammatory symptoms gradually subsided, but left the patient almost helpless, because the opacity directly occluded the pupilary space. It was not very thick, however, and I determined to try the effect of thiosinamin, which drug, as you know, is obtained by mixing the oil of black mustard seed with alcohol and aqua ammonia. It is supposed to be an active alterative, a pronounced lymph stimulant, and to quote Dr. George F. Suker, who has recently written an elaborate paper upon its uses, it is indicated whenever it is desirable to have a local reaction in inflamed cicatricial or poorly nourished areas without materially influencing the general system as a whole, and whenever a glandular stimulant is indicated or a hyperleucocytosis is desirable. It has been supposed to have a special value in ophthalmology in the treatment of corneal opacities, and, as you probably know, in medicine generally it has been suggested in the treatment of keloids, urethral strictures, rheumatic joint affections, and a number of chronic skin lesions. Dr. Suker in the before mentioned article reports cases of corneal opacity, as well as other diseases, in which there had been cicatricial and exudative lesions treated with this drug with some good results. It must be given for long periods at a time, from one month to a year or more. The starting dose may be half a grain three times a day, and it usually can be increased to six grains per diem, although it is wise to intermit it after it has been taken for a month for a certain period of time, and often the larger doses cannot be maintained on account of the vertigo which they produce.

The patient before you took the fullest doses, and continued them for a period of not less than three months without the slightest effect. I have also tried the remedy in several other cases: one an opacity of the cornea following keratoiritis, and in several cases of corneal opacity as the result of prolonged uveitis, and also in one or two minor corneal lesions as the result of ulceration. In the last named cases the administration of the drug was not continued for so long a period as I have just mentioned, but I failed to secure the least favorable result.

You will observe that the opacity does not reach completely to the margin of the cornea, and that therefore there is a small area of clear corneal tissue; hence an outward iridectomy might produce some im-

provement in vision, the rays of light being able to pass through this peripherally situated pupil. This operation I now perform in the usual manner.

At a somewhat later date, as soon as the eye has forgotten the iridectomy, I shall tattoo the margin of the leucoma, which impinges on the base of the coloboma, because it has been found that under these circumstances, as particularly noted by Hirschberg, De Wecker, and other observers, not only is the general appearance of the eye improved by the tattooing, but the visual acuity is actually sharpened. For tattooing purposes the best India ink mixed with sterile water and pricked into place with a needle is employed.

HYOSCINE IN THE TREATMENT OF MORPHINISM.

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The revival of hyoscine hydrobromate as a remedy to stop the suffering from the withdrawal of morphine or alcohol again brings into prominence a valuable but very uncertain drug. The claims that it is a substitute for morphine to prevent the suffering following the withdrawal of the drug, and that it is a safe and harmless drug, are not verified by careful study and experience. If the obliteration of pain and conscious suffering is the principal object sought in the treatment of morphinism, this drug will accomplish this purpose. If in securing this object a more profound toxic state is produced, prominent by prolonged delirium, stupor, and sense disturbances with collapse, hyoscine appears to be a very dangerous remedy. In both morphinism and alcoholism there are toxic states of the brain centers, together with anemias, hyperemias, and localized irritations. Any drug which intensifies these conditions is very unsafe. Drugs which diminish the power of elimination, increase the growth of toxins, and break up nutrition, are to be avoided. In all drug addictions there are toxic states with a tendency to delirium and convulsive activity which are to be avoided if possible. In the withdrawal of both alcohol and morphine this tendency to delirium and exhaustion should be prevented as far as possible by such measures and remedies as will encourage the elimination of the poisons and improve the nutrition.

Not infrequently in the withdrawal stage of both alcohol and morphine, mild states of delirium and dementia appear, which if left to themselves speedily die out, but if treated with drugs which have a tendency to increase this condition, serious results follow. The withdrawal period in the treatment of drug addictions is usually regarded as the most important, when literally it is of little significance, compared with the after-treatment. The physician following the patient's exaggerated estimate of this period concentrates his measures and remedies on this event, which is in reality quite insignificant compared with other stages of the disease. The conditions which follow the withdrawal in proper surroundings are easily controlled by many simple and harmless remedies and measures, and it is difficult to understand why dangerous remedies should be used to accomplish what can be done so easily, and with as little risk. When hyoscine was first introduced, many very enthusiastic articles appeared, claiming that it was a substitute for the painless treatment of morphinism and of alcoholism. Since then it has been used by quack specifics in "quick-cure asylums," and when the patient becomes delirious and the symptoms alarming, hyoscine is withdrawn and morphine is given. In many instances the patient is sent out from the asylum as cured. He is given a tonic preparation of strychnine, hyoscine, and morphine to build him up. Later it is found impossible to be comfortable without this tonic, and after taking it for a time he gets discouraged and relapses.

A number of cases have come under my care in which morphine-takers after being treated by irregulars, either at some "gold cure place" or by specifics taken at home, became delirious. The form of the delirium, with dilated pupils, and peculiar hallucinations, and excessive thirst, were strong indications that hyoscine had been used. I have made several tests of the effects of hyoscine in a number of cases of morphinism, and also of alcoholics, and always with bad results. The protracted

delirium and pronounced exhaustion were exceedingly difficult to treat, and the recovery was slow and unsatisfactory. It was given in small doses often repeated, and in large doses at long intervals, but the effects were practically the same. In each instance the morphine was withdrawn in a short time, generally the first day, and all consciousness of pain or suffering was obliterated after the first or second dose of the drug was given. In each case delirium with hallucinations and delusions came on after the second or third dose, and continued from two to four weeks. In three instances the delirium lasted two months, and in one instance the mind did not recover, and the patient was placed in an insane asylum, where he remains at this present time, two years later. Two alcoholics never recovered fully; while not drinking, they have become mild cases of dementia with great prostration. In all these cases the stupor, delirium, and general relaxation with extreme exhaustion was prominent. Excessive dryness of the throat and mouth lasted for a long time, the patient using large quantities of water, and suffering from profuse sweating, with irritation of the bowels.

In a comparison made with two cases taking the same amount of morphine, about the same physical condition, one was treated with hyoscine in large doses and the morphine withdrawn at once. The delirium and exhaustion lasted three weeks, and the convalescence extended over two months. In the other case the withdrawal period lasted five days, and baths, electricity, bromides, lupulin, and other mild narcotics were given to lessen the acuteness of the nerve irritation. There was no delirium, only general exhaustion, from which the patient rapidly recovered, and in two months resumed his business without any other symptoms except exhaustion from overexercise.

A prominent physician, who was a morphine-taker, tried to cure himself by taking large doses of hyoscine. He died suddenly, and there were many reasons for believing that this drug was an active cause. A former patient of mine who had relapsed was treated by a physician with large doses of hyoscine and the morphine removed at once. The delirium continued for two weeks, then suddenly terminated in coma and death. The physician was very confident that the drug was the active cause of the final collapse.

No one man's experience is sufficient to decide authoritatively on the value of this drug. There are, no doubt, many cases in which it might be used to advantage, but as a rule I think it is very dangerous in both morphinists and alcoholics. In these cases there are so many unknown conditions, and states of poison and exhaustion, present that it is empirical to attempt to reach them by drugs of this class. Reckless medication in the treatment of these drug habitués is responsible for the death of a large number.

In a general way the action of morphine and alcohol is manifested by more or less uniform symptoms, but the real pathological condition varies widely; hence there can be no specifics, nor any remedies that approach a specific, which can be used in all cases. The withdrawal of one narcotic and the substitution of another can never bring about a cure, and the covering up of the craze for the drug is mere chemical restraint, which fails, and is followed by greater degeneration. To use one drug as an antidote for another in drug addictions is a very doubtful measure. From my experience I should never use hyoscine in morphine or other drug addictions, and I think further experience will sustain this opinion.

REPORT OF FIFTY-THREE CASES OF TYPHOID FEVER, TREATED IN THE MEDICAL WARDS OF THE PRESBYTERIAN HOSPITAL, IN WHICH ACETOZONE WAS USED DURING NOVEMBER AND DECEMBER, 1902, AND JANUARY, 1903.

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The following clinical study seems to warrant these conclusions as to the value of acetozone in the treatment of typhoid fever:

1. It acts as a valuable intestinal antiseptic and appears to lessen the tendency to tympanites and diarrhea, especially when it is commenced in the early part of

the fastigium and continued until convalescence is well established.

2. The stools appear less offensive, and in most cases color and consistency are not affected by its administration.

3. Acetozone does not seem to act upon the heart or respiratory organs, nor has it any appreciable effect on the kidneys.

4. Hyperpyrexia appears but rarely in cases in which it is used.

5. Relapses are infrequent when it is used until convalescence is fully established.

All the cases gave a positive Widal reaction and the other clinical symptoms of typhoid fever.

Case No.	Sex.	Age.	Day of disease on admission.	Day of disease on which temperature reached normal.	Number of days in hospital.	Complications or unusual symptoms.	Result.
1	Female.	14	5th	17th	26	No complication; moderate attack.	Cured.
2	Male.	23	6th	28th	39	Severe case; no complications; gonorrhea also.	Cured.
3	Male.	37	9th	17th	28	Light case; no complications.	Cured.
4	Male.	25	6th	15th	27	Mild case; no complications.	Cured.
5	Female.	23	5th	30th & 43d	57	True relapse after temperature normal two days.	Cured.
6	Female.	33	6th	17th	30	Four months pregnant; did not abort.	Cured.
7	Female.	34	8th	17th	27	Delivered of healthy child two weeks preceding admission; no complications.	Cured.
8	Female.	22	6th	20th	38	Associated bronchitis.	Cured.
9	Male.	27	6th	17th	29	Mild case.	Cured.
10	Male.	24	5th	19th	28	Mild attack.	Cured.
11	Male.	13	4th	22d	45	Moderate attack.	Cured.
12	Female.	8	8th	28th	50	Marked tympanites; severe attack.	Cured.
13	Male.	13	4th	25th	40	Moderate attack.	Cured.
14	Female.	27	7th	18th	27	Mild attack.	Cured.
15	Female.	24	1st	20th	43	Delivered of healthy child one month preceding.	Cured.
16	Male.	22	9th	25th	28	Mitral regurgitation; plumbism.	Cured.
17	Male.	15	4th	21st	27	Mild case.	Cured.
18	Female.	41	4th	18th	24	Mild attack.	Cured.
19	Male.	26	11th	25th	27	Moderate attack.	Cured.
20	Female.	26	9th	37th	70	Tympanites; typhoid state; diarrhea; very severe attack; one relapse.	Cured.
21	Female.	17	6th	24th	46	One relapse; moderate attack.	Cured.
22	Male.	11	8th	43d & 52d	63	One relapse; bronchopneumonia also during primary attack.	Cured.
23	Male.	18	6th	28th	35	Moderate attack.	Cured.
24	Female.	28	9th	22d	36	Five months pregnant; did not abort.	Cured.
25	Female.	15	11th	31st	40	Anemic; delirium; associated bronchitis.	Cured.
26	Male.	47	7th	19th	28	Circulation poor; moderate attack.	Cured.
27	Female.	15	10th	25th	26	Mild attack.	Cured.
28	Female.	37	7th	34th	37	Mitral regurgitation; acute bronchitis; ear complication; otitis media; severe attack.	Cured.
29	Female.	26	4th	22d	49	Tympanites.	Cured.
30	Female.	17	6th	18th	42	Tympanites.	Cured.
31	Female.	28	7th	22d	24	Severe attack.	Cured.
32	Female.	28	7th	33d	47	Metastatic abscesses; severe attack; typhoid state; diarrhea; nephritis.	Cured.
33	Male.	34	6th	33d	38	Large abscess on left buttock during stage of decline; bacteriologic examination showed bacillus coli and staphylococci present.	Cured.
34	Female.	27	6th	19th	36	Slight relapse, very weak; typhoid state; delirious two days; abscess over right nates; bronchitis.	Cured.
35	Female.	22	7th	43d & 63d	92	Marked prostration; parenchymatous nephritis; bronchopneumonia; neuritis of toes; delirium for ten days; typhoid state; severe infection.	Cured.
36	Female.	32	10th	26th	38	One hemorrhage, about 3 iv; severe infection.	Cured.
37	Female.	17	6th	22d	48	Slight relapse.	Cured.
38	Female.	20	5th	20th	46	Moderate relapse; large varicose ulcer of leg associated, been present for some time.	Cured.
39	Female.	18	9th	44th	58	Severe infection; marked prostration; typhoid state; acute bronchitis.	Cured.
40	Female.	15	8th	34th	52	Associated bronchitis; delirium and tympanites marked for three days; severe infection.	Cured.
41	Male.	38	5th	32d	56	Moderate relapse; hemorrhages, otitis media, metastatic abscesses.	Cured.
42	Male.	27	6th	27th	45	Bronchopneumonia associated.	Cured.
43	Male.	42	6th	20th	35	Mild case.	Cured.
44	Male.	41	6th	19th	29	Mild attack.	Cured.
45	Male.	28	4th	22d	39	Associated bronchitis.	Cured.
46	Male.	15	5th	25th	38	Moderate attack.	Cured.
47	Male.	19	12th	37th	60	Severe hemorrhage preceding admission, almost ensanguinated; marked prostration; meningitis; semi-comatose for ten days, with respirations 44 to 50, pulse 140 to 160; discharge from both ears; metastatic abscesses; typhoid state marked; a very critical case; lumbar puncture, large dorsal decubitus developed.	Cured.
48	Male.	15	7th	42d	50	Tympanites; acute bronchitis.	Cured.
49	Female.	11	7th	21st	30	Moderate case.	Cured.
50	Female.	12	5th	27th	36	Severe attack; tympanites; mitral regurgitation and aortic stenosis.	Cured.
51	Male.	24	6th	29th	40	Bronchopneumonia; typhoid state.	Cured.
52	Male.	17	13th	29th	32	Typhoid state; severe attack.	Cured.
53	Male.	18	7th	23d	24	Associated bronchitis.	Cured.

IODOFORM SUBSTITUTES AND ADULTERATION.

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Although iodoform was discovered as far back as 1822 and first employed in medicine in 1837, it did not attain any prominence as a remedial agent until its introduction into antiseptic surgery about thirty years ago. Since then it has been more extensively used as a surgical antiseptic than any other drug in the materia medica. It was at first heralded as a perfectly safe remedy, and in consequence was used copiously, and what now would be regarded as recklessly, as an application to wounds. After a while it was found that this apparently innocuous remedy was capable of giving rise to injurious and even lethal effects, and to this in great part we owe the large and increasing number of iodoform substitutes which have been introduced during recent years. An equally objectionable feature attending its use has been its extremely offensive odor to many persons, to conceal which numerous attempts have been made to produce odorless iodoform preparations.

There seems, however, some misconception as to what is meant by an iodoform substitute, and this will make it necessary to discuss briefly the chemistry and physiological action of iodoform itself.

Iodoform is chemically tri-iodomethane, CHI_3, and is made by acting upon methyl alcohol with iodine in the presence of a carbonate. Its antiseptic power is essentially due to its property of liberating iodine, of which it contains 96.6 per cent, when brought in contact with wound secretions which decompose it, thus setting free the iodine. Nothing, however, is definitely known as to the combinations into which the liberated iodine enters in order to exert its antiseptic action. According to Binz, the iodine is converted into iodides and iodates, especially the former. These compounds have been found in the urine after the application of iodoform. It is probable, however, that still other and more complex iodine combinations are generated, since the action of the drug differs materially from that of the iodides.

In regard to the antiseptic power of iodoform the results of experiments are also conflicting and do not permit of any positive deductions. It may be regarded as established that iodoform has no direct antiseptic action. Experiments in which iodoform was added to cultures of various microörganisms, such as pus organisms, the bacillus of anthrax, and the streptococcus of erysipelas, have shown that it is incapable of causing their destruction or inhibiting their growth (Rovsing, De Ruyter, Behring, Karlinski, and Kronacher). From this it must be concluded that iodoform is an indirect antiseptic which exerts its antibacterial influence only when decomposed by the tissues, blood, or wound secretions. It seems to neutralize ptomaines, and also to promote the resisting power of the cells against bacteria. Thus, while the investigations of Stubenrauch have shown that iodoform has no specific antituberculous action, he concludes that the destruction of tubercle bacilli under its use is due to its action upon the tissues. Aside from its antiseptic influence, iodoform exhibits a well marked local anesthetic action. This may be due to its methane radical, which is also present in chloroform.

There is another property of iodoform which no doubt plays an important part in its action, and that is its desiccative effect. It is a matter of common observation that under its influence wound secretions are lessened in amount, and this, according to Binz, is due to its action in preventing the emigration of white blood cells. Furthermore, when applied to unhealthy surfaces, it stimulates the formation of granulations and promotes cicatrization.

In view of the fact that the antiseptic power of iodoform is essentially dependent upon the liberation of nascent iodine, it will be seen that the only drugs entitled to the name of substitutes are those which also contain iodine as an active ingredient, and liberate it in a somewhat similar manner. Hence the large number of new drugs which depend for their antiseptic power upon formaldehyde, phenol, naphthol, mercury, etc., cannot be properly considered as iodoform substitutes, since their action must differ in kind, owing to the different character of their active constituent.

The toxic properties of iodoform which

have rendered it desirable to discover efficient substitutes arise from the fact that, under certain conditions, or when too freely used, the iodine is liberated in excessive amounts and then acts as a local irritant, or through absorption gives rise to poisonous systemic effects. The local effects consist in cutaneous eruptions with considerable swelling and inflammation of the skin. In the constitutional form of poisoning the symptoms vary in intensity. In the milder form there may be slight nervous disturbances, such as general malaise, change of temper, lassitude, headache and insomnia, with loss of appetite and increased pulse-rate. In the more marked degrees cerebral disturbances are much more severe and may resemble an acute meningitis or a true dementia. Death may take place from collapse and in a comatose state, or it may result from gradual exhaustion. It has been observed that age has some influence in the production of these toxic effects, older people being more susceptible than young persons.

As already mentioned, the reason for the numerous attempts to produce a substitute for iodoform is chiefly the recognition of its toxic action. How far these attempts have been successful must be left to individual judgment. The vast majority of substitutes that have been brought forward contain relatively small amounts of iodine as compared with iodoform, and no doubt this to some extent explains why they are less poisonous. The chief reason, however, of their comparative innocuousness is probably the manner in which the iodine is split off and the combinations which it undergoes with the secretions and tissues. Thus, for instance, a compound, while retaining a relatively smaller proportion of iodine, may liberate it more actively and continuously than one containing a much larger amount, and may also yield it in such form that it is utilized to better advantage. The freedom from offensive odor shared by all these substitutes is another point in their favor, although the unpleasant odor of iodoform may be greatly, if not completely, masked by the addition of various aromatics.

Let us now briefly review some of the more important substitutes for iodoform, using the term in the restricted sense given above.

Iodol was the first substance of this kind to be introduced, but although known for a considerable time, it has never gained any great prominence, and during later years it has been very little heard of. Its chemical name is tetra-iodo-pyrrol, having the formula C_4I_4NH. It occurs as a yellowish-brown crystalline powder, odorless and tasteless, insoluble in water, but soluble in alcohol, ether, and fatty oils. Its percentage of iodine is 88.9. While less poisonous than iodoform, cases of constitutional toxic effects resembling those of the latter have been reported. It has been practically used in all the conditions in which iodoform is ordinarily employed, such as local tuberculous lesions, venereal ulcers, and as a surgical dressing.

The second of this group of drugs is *aristol,* which was introduced in 1890. It is known chemically as di-thymol-di-iodide, having the formula $C_{20}H_2O_2I_2$, and containing 45.8 per cent iodine. It appears as a reddish powder, having a slight aromatic odor. It is insoluble in water and glycerin, slightly soluble in alcohol, and readily in ether, chloroform, collodion, and in fixed and ethereal oils. Aristol may be employed in the dry powder, in ointments, in solutions, crayons, and in suppositories. In making solutions and ointments heat should be avoided. Owing to the bulkiness of the powder it has a much greater covering capacity than iodoform. The drug is not compatible with hydrates, carbonates, metallic oxides, starch, and ammonia. At the present time aristol is probably more extensively used than any of the other iodoform substitutes. Its chief advantages are freedom from local irritating effect and complete absence of toxic action due to absorption, besides its comparative odorlessness. Like iodoform, aristol owes its antiseptic power to the splitting off of iodine in a molecular form when brought into contact with wound secretions. This liberation of iodine does not take place to a sufficient extent to produce toxic effects from absorption. Local irritation has been but rarely observed. It is probable that the thymol in its composition also adds to its antiseptic power. The range of application of aristol embraces all conditions in which an antiseptic of this class is indicated, such as the treatment of wounds

resulting from injury or from operative procedures, ulcers, burns, cutaneous affections, and diseases of the eye, ear, and nose, and local syphilitic lesions.

Nosophen is tetra-iodo-phenol-phthalein, having the formula $C_6H_4C_2O_2$ $(C_6H_2I_2OH)_2$, and containing 61.7 per cent of iodine. It is a very light, yellowish-gray, odorless, and tasteless powder, insoluble in water, slightly soluble in alcohol, glacial acetic acid, ether and chloroform, and readily dissolving in alkaline fluids. Nosophen forms salts with bases, of which the sodium salt, with the formula $C_6H_4C_2O_2$ $(C_6H_2I_2ONa)_2$, has been introduced under the name of antinosin. This is a blue amorphous powder, readily soluble in water and alcohol. Of nosophen it is stated that, when brought into contact with wound secretions, it is converted into its sodium salt (antinosin), which forms complex iodoalbuminates, and thus inhibits the growth of microörganisms. No toxic effects from its use have been reported. Both nosophen and antinosin have met with favor as general wound disinfectants, the former being employed as a dusting powder and the latter in solutions of various strength. Owing to the lightness of the powder, nosophen has also been employed in the treatment of diseases of the nose and throat and after operations upon these parts.

Europhen (di-iso-butyl-cresol-iodide) is a combination of iodine with an innocuous cresol. Its formula is $2(C_6H_3CH_3C_4H_9O)_2HI$, and it contains 28 per cent of iodine. Europhen forms a yellowish amorphous powder of aromatic odor, insoluble in water, and easily soluble in alcohol, ether, and the fatty oils. The powder is very light and has five times the covering capacity of iodoform, and it adheres well to wound surfaces. It is incompatible with starch, metallic oxides, and alkalies, and should be preserved in a dry place and away from the action of light. It may be employed in the dry powder, ointments, solution, and in suppositories. Although europhen contains less than one-third of the amount of iodine in iodoform, experiments have shown that it yields its iodine much more readily in the presence of moisture, and unlike the latter has a direct bactericidal action, as shown by the experiments of Christmann on tubercle bacilli. Probably the cresol element in its composition contributes to this antiseptic action. Europhen has been quite extensively employed in all the fields of application of iodoform, especially in the treatment of syphilitic and tuberculous lesions, in affections of the eye, nose, and throat, in gynecology, and as a dry dusting powder for wounds and ulcers.

Airol (bismuth oxy-iodo-gallate), with the formula $C_2H_2(OH)_3COO(BiOHI)$, forms a greenish-gray, fine, voluminous, inodorous, and tasteless powder; on exposure to moisture it assumes a red color and loses its iodine. It is also slightly decomposed by water; it is readily dissolved by dilute alkalies and acids. Airol has proved to be a very serviceable antiseptic, combining the effects of bismuth subgallate with those of iodine. Its injection into an abscess, however, has caused symptoms of bismuth poisoning. It is applied to wounds, etc., as a dusting powder or in ointments free from water. It is used in the treatment of local tuberculous affections, burns, ulcers, diseases of women, etc.

Loretin (meta-iodo-ortho-oxychinolin-ana-sulfonic acid), having the formula $C_9H_4IOH\text{-}SO_3H\text{-}N$, forms a yellowish, inodorous, crystalline powder, very slightly soluble in water, insoluble in ether and the oils. Its salts, especially the calcium salt, however, are completely soluble. From the reports published on loretin, which are not numerous, it would appear to be a valuable substitute for iodoform. It is affirmed to be less toxic, while more powerfully antiseptic, and has the same indications.

Eigons is a name applied to a group of compounds of albumin with iodine. Alpha-eigon is a light-brown powder, containing about 20 per cent of iodine, which is liberated by both acids and alkalies, particularly the former, insoluble in water, odorless and tasteless. Alpha-eigon sodium is a nearly white, odorless, and tasteless powder, containing about 15 per cent of iodine. Both these preparations have been found of value in wound treatment, as well as in various diseases in which iodoform is employed. They are said to give off their iodine readily, and to be free from toxic or irritating effects. They may be employed in a mixture with talcum powder,

10 to 30 per cent, or in solutions, 5 to 10 per cent.

Sozoiodol (di-iodo-para-phenol-sulphonic acid), with the formula $C_6H_2I_2(OH)SO_3H.+3H_2O.$, occurs in the form of a white crystalline powder, slightly soluble in cold water, more readily in warm water, readily soluble in alcohol and glycerin, and containing about 53 per cent of iodine. It may be employed in the form of a two- to three-per-cent solution, or as an addition to other dusting powders. Various salts, mercury, zinc, potassium, and sodium, are also in use. It has been employed to some extent in the treatment of diseases of the skin, nose, throat, and ear, and in gynecology.

Iodoformogen is a combination of albumin and iodoform and appears as a yellow powder, insoluble in water and almost odorless. It contains 10 per cent of iodoform. It is three times lighter than iodoform, and therefore covers a larger surface. As it is readily decomposed it should be kept in dark bottles.

Iodoformin (hexamethylen-tetramine-iodoform), with the formula $(CH_2)_6N_4.CHI_3$, contains 75 per cent of iodoform. It is a white, odorless powder, turning yellow on exposure to light. When brought in contact with moisture it liberates iodoform.

Sanoform (di-iodo-salicyclic acid methyl ester) appears in odorless, tasteless crystals, soluble in about 200 parts of water, but readily dissolving in ether, chloroform, and fixed oils. It has been used to some extent as a surgical dusting powder.

Iodocresine is a combination of cresylic acid and iodine, a violet red, amorphous, fine, odorless powder, slightly soluble in ether, but dissolving readily in chloroform and alkalies. It contains 54.4 per cent of iodine. It has not been used sufficiently to permit of any conclusion as to its therapeutic merits.

Resorcinol is obtained by heating together equal parts of resorcin and iodoform. Resorcinol is an amorphous, yellowish-brown powder, having an odor resembling that of iodine. It has been used upon leg ulcers and unhealthy and syphilitic lesions.

Di-iodoform (ethylene periodide), having the formula $C_2H_2I_4$, forms yellow crystals, almost odorless, insoluble in water, but soluble in chloroform, and slightly in alcohol and ether. It is partly decomposed by light and should therefore be kept in a dark place. It contains 95.5 per cent of iodine, and has been recommended as an antiseptic in place of iodoform.

The popularity of some of these preparations has given rise to the introduction of numerous mixtures alleged to contain iodine in some special combination, and sold as substitutes of aristol under various titles, generally using the chemical name di-thymol-di-iodide; some of them contain no iodine whatever, but consist of mixtures of such antiseptics as boric acid or acetanilid, diluted with starch or talcum. Other concoctions have appeared under the title of some well known antiseptic, made up to imitate in general appearance. It is to the dangerous character of many of these mixtures that the attention of the medical fraternity is directed, as exemplified in the accompanying table, which represents the analysis of twenty-seven of such substitutes which are sold in various cities of the Union under the title of di-thymol-di-iodide. The percentage of ash, which varies from 0.7 to 62, represents the quantity of inorganic substances present, which consisted of such as tripoli, ferric oxide (Fe_2O_3), calcium carbonate ($CaCO_3$), zinc oxide (ZnO), boric acid (H_3BO_3), and alkalies. The ether-insoluble portion includes starch in addition to the above; true di-thymol-di-iodide contains only from one to two per cent of insoluble matter. Attention is directed to the excessive alkalinity of some of the samples, which contain as much as 11 per cent of a mixture of caustic and carbonate of soda; aside from the caustic action of these, iodine, if present in organic form, is much more rapidly liberated and gives rise to toxic effects from absorption. Samples Nos. 22, 23, 25, and 26 contain no iodine, either in the organic or inorganic form; Nos. 3, 4, 17, 9, 10, 12, 20, 22, and 23 have made no pretense at even imitating the properly prepared product, some, it is true, containing a small amount of di-thymol-di-iodide as impurity. Others, as Nos. 1, 5, 14, 15, and 19, contain a small amount of this antiseptic, diluted with calcium carbonate and colored sufficiently with ferric oxide. Samples Nos. 6, 7, and 11, as also all others which contain any

iodized thymol, represent carelessness of the grossest sort in the failure properly to wash the precipitated di-thymol-di-iodide, which is absolutely necessary for the removal of the caustic alkali, as well as the alkali chlorides and iodides.

No punishment is too severe for such unprincipled sophisticators.

	Ash per cent.	Ether per cent insoluble.	Color.	Impurities.	Per cent Na_2CO_3.
1	37	54.3	Pale brown.	$CaCO_3$, $Fe_2O_3SiO_2$, NaI, NaCl.	11.5
2	27	34.8	Gray.	Zinc oxide, NaI, NaCl.	0.0
3	51	62.0	Yellow.	$CaCO_3$, acetanilid, NaI.	5.2
4	8	9.2	Pale-brown.	$CaCO_3$.	0.0
5	34.7	49.0	Light red.	$CaCO_3$, Fe_2O_3, NaCl.	8.4
6	1.5	7.4	Brown.	NaI.	1.0
7	4.0	8.0	Brown.	NaCl.	3.1
8	30.0	31.0	Pale brown.	Excessive NaI.	5.2
9	39.4	39.5	" yellow.	Zinc oxide, acetanilid.	2.1
10	14.0	18.8	" yellow.	$CaCO_3$, acetanilid.	11.0
11	2.0	22.2	" brown.	KI: Starch.	9.0
12	37.6	50.6	" yellow.	$CaCO_3$, acetanilid.	1.5
13	9.6	9.8	Red brown.	NaCl, NaI.	0.0
14	42.0	64.6	Pale brown.	Zinc oxide, Fe_2O_3, NaCl.	6.8
15	42	62.0	Red brown.	$CaCO_3$, Fe_2O_3, NaCl.	4.2
16	26	69.5	Blue gray.	Starch, $CaCO_3$, NaI.	6.3
17	6.8	11.7	Cream.	$CaCO_3$, acetanilid.	0.0
18	27.0	37.1	Brown.	NaI.	0.0
19	33.7	46.0	Light red.	$CaCO_3$, Fe_2O_3, NaCl.	3.1
20	18.2	25.0	Gray.	NaI, NaCl, starch.	6.8
21	51.0	60.0	Pale yellow.	$CaCO_3$, NaCl.	6.3
22	62.3	67.6	White.	Zinc oxide, $CaCO_3$, acetanilid.	3.1
23	45.3	62.8	Pale yellow.	$CaCO_3$, NaCl, acetanilid.	0.0
24	21.0	26.2	Pale brown.	$CaCO_3$, NaI.	4.2
25	24.0	76.4	Red brown.	Tripoli, Fe_2O_3, H_3BO_3.	0.0
26	57.3	73.4	" brown.	Tripoli, Fe_2O_3, $CaCO_3$, starch.	0.0
27	0.7	6.4	" brown.		0.0

When compared with pure aristol (which yields no ash, about 2 per cent of ether insoluble residue, and is perfectly neutral) the dangerous character of the above concoctions may be realized.

THE PHYSIOLOGICAL ACTION OF ADRENALIN CHLORIDE.

By Isaac Ott, M.D.,
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AND
S. B. Harris, M.D.

We have performed over fifty experiments in the research which is here recorded. The adrenalin used was that of Takamine, and mixed or not mixed with chloretone. As is known, the solution contains one part of adrenalin to 1000 of normal saline with .5 per cent of chloretone. Ether was used as an anesthetic for the animals.

Circulation.—These experiments were made upon the hearts of frogs and turtles. The blood-vessels entering and leaving the heart were divided, and then the organ *in situ* was attached to a lever which registered the contractions. The nerves going to the heart were also divided. The adrenalin solution was locally applied to the cardiac organ and the effects noted. As a rule it increased the extent and frequency of the contractions. The immediate effect quite often was a decrease of the force and rapidity of contractions, followed by an increase of both. In some cases the contraction was not ended before a new one of short duration and height started up (Fig. 1). When the local application of a one-per-cent alcoholic solution of nitroglycerin was applied to the heart the movements were arrested for several minutes. We might state here that four drops of absolute alcohol has the same effect, hence we are not certain that nitroglycerin topically stops the heart. Now in a heart arrested by the local use of alcoholic solution of nitroglycerin for nine minutes the local application of adrenalin starts it up, and increases its force. The local application of nitrite of amyl depressed the heart. Now, if to weak frog hearts we applied adrenalin it acted as a stimulant to restore its activity, thus resembling the action of digitalis.

Oliver and Schaeffer[1] and Gottlieb[2] on frogs, and Hedebom[3] and Cleghorn[4] on the isolated mammalian heart, found that adrenal extract increased the force and rapidity of the heart-beat. Oliver and Schaeffer and Gottlieb in the frog noted an increased rhythm of cardiac contraction. Our experiments with adrenalin confirm these statements, although they used the adrenal extract with its impurities.

All these observers believe it increases the cardiac activity by an effect on the muscle of the heart, whilst Gottlieb thinks it acts by an effect on the cardiomotor ganglia. Our experiments incline us to the opinion that its action is muscular and not on the ganglia. Cleghorn, using the adrenal extract on the strip of the mammalian heart free from ganglia, saw the force and frequency increase.

Respiration.—These experiments were made upon rabbits. They show that adrenalin per jugular as a rule at first makes the respiration superficial with almost a standstill of the respiratory movements. Boruttau[5], with adrenal extract, states that

the time of respiration is lengthened and there is a more or less arrest in expiration. The curve shows an arrest chiefly during the act of expiration (Fig. 2) in our experiments. After the standstill the respirations become more frequent and stronger.

Szymonowicz and Cybulski[6] found also a kind of Cheyne-Stokes breathing, which is also seen in Fig. 2 just before the second injection. They also noted after the primary arrest of respiration an increase in the force and frequency of the movements of the chest. We did not find that section of the vagi altered the results which Boruttau and Ott[7] have previously shown. Reichert[8] has also observed the same phenomena. These experiments prove that adrenalin acts by an effect upon the respiratory center and not on the vagi endings.

Intestinal Peristalsis.—Ott[9] was the first to observe that adrenal extract by the jugular vein caused a diastolic arrest of the intestine, followed by an increase of the pendulum movements. This statement was confirmed by Professor Pal,[10] of Vienna. Dr. Bunch when experimenting on morphinized dogs found an increase of intestinal peristalsis and not the diastolic standstill. Professor Pal[11] has discovered that the error of Dr. Bunch[12] was due to the use of morphine, which has a sort of antagonism to adrenal extract. Boruttau and Langley[13] have also obtained a diastole of the intestine. Our experiments were made upon dogs etherized. The intestinal movements were recorded by means of the intestinal oncometer and Brodies' bellows recorder. The adrenalin given by the jugular vein arrested the movements of the intestine for nearly two minutes, as is shown in Fig. 3.

Experiments made with spleen extract show, on the contrary, an acceleration of peristalsis. We have here in the abdominal glands two agents acting antagonistically—the one, adrenalin, arresting the intestinal movements; the other, the spleen, accelerating them. Pal believes the arrest of the intestinal movements to be due to the vasoconstriction in the blood-vessels of the intestinal wall. Boruttau believes it arrests peristalsis by an action on the intestino-inhibitory ganglia. Salvioli[14] exsected a piece of intestine and passed an artificial circulation of blood through its vessels impregnated with an extract of the adrenals. He saw the capillaries contracted. He saw the smooth muscle of the intestinal wall contracted to a considerable extent and peristalsis was arrested.

Excretion of Adrenalin.—The generally accepted theory is that adrenalin is destroyed in the tissues in a very rapid manner. This accounts for the short action that it has on the different functions when injected. It occurred to us that after the injection of adrenalin some might be excreted. To test this we used the elevation of blood-pressure after an injection per jugular vein, for Moore has shown that one-millionth of a gramme of the dried gland increases arterial tension. We injected several minims of adrenal solution per jugular in divided doses, and at the end of forty-five minutes to an hour the urine was drawn off and some of it injected per jugular in the cat or rabbit. Care was always taken that the cannula or syringe did not contain any traces of adrenalin. A slight rise of pressure ensued after the injection, as is shown in Fig. 5. Normally, the urine of the cat or rabbit depresses the arterial tension, as is shown in Fig. 6. When adrenalin solution, one drop, was added to normal urine it caused an elevation of arterial tension. Urine depresses the blood-pressure at the time that adrenalin is struggling to elevate it. The amount of adrenalin excreted must be small, as the one drop of adrenalin solution put in 19 minims of normal urine elevates the tension more than the 19 minims of urine drawn after the injection of 100 minims of adrenal solution per jugular. Hence, whilst nearly all the adrenalin is oxidized in the tissues, yet a small part can be excreted by the kidneys, when an excess is poured into the circulation.

Pupil.—We have studied the effect of adrenalin on the pupil by means of the eye of the cat. Locally it had no effect, but when injected per jugular there was a momentary dilatation. After section of the cervical sympathetic we find, as has Dr. Meltzer,[15] that locally instillation on the side of section and by the jugular dilates the pupil. When given subcutaneously it had no effect upon the pupil on the day of division of the cervical sym-

pathetic, but acted as a dilating agent for nearly an hour on the side of section a few days afterward. We can also confirm the discovery that the blood-vessels of the ear are more constricted on the side of section than on the normal side when a subcutaneous injection is made.

Temperature.—Reichert found adrenalin increased the temperature. On rabbits, adrenalin per jugular vein elevated the temperature nearly 1° F. The question now arises, How does it do it? The present state of knowledge of the regulation of temperature is as follows: One[16] of us was the first to show that a transverse section of the corpus striatum produced a temperature of 111½° F., which has been confirmed by several observers. It was also shown that a puncture of the tuber cinereum (anterior end of thalamus) caused a great rise of temperature to ensue, which has been confirmed by Prof. Von Tange on the brain of the horse. In the case of the tuber the fibers were not divided coming from the corpus striatum because a puncture through the roof of the mouth of the rabbit produces the same result, although only the lower surface of the tuber has been punctured with a needle. Landois and Eulenberg have shown that about the cruciate sulcus we have a thermoinhibitory center. One of us has also described another thermoinhibitory center which has been denominated the sylvian. The two thermogenic centers in the corpus striatum and tuber cinereum, and the two thermoinhibitory, the cruciate and sylvian, in the cortex have afferent and efferent fibers. Any transverse section behind them of the crura cerebri or pons simply cuts them out and permits the thermic apparatus behind the section to elevate the temperature. That a greater rise of temperature should ensue after pontal than after crural section is quite in accord with the well known fact that successive sections from before backward cause a greater activity of the spinal cord centers behind the section.

Now, one of us has shown that after the venous injection of beta-tetrahydro-naphthylamin in the normal animal a great rise of temperature ensues. But after section through the cerebral crura this drug is powerless to raise the temperature. A needle point thrust into the pons or crura causes a very fugitive rise, and a feeble one at that. But when the needle goes into the corpora striata or tuber you have a quite permanent and considerable elevation of temperature. To assume that a different kind of thermogenic center exists in the pons or crura is begging the question. On what part of this thermic mechanism adrenalin acts is difficult to state. As there is no reason to believe it paralyzes the thermoinhibitory centers, we must assume that it probably acts on the basal thermogenic centers, which stir up the trophic centers in the anterior horns of the spinal cord.

Antagonism of Adrenalin and Nitroglycerin on the Vasomotor System.—In adrenalin we have a great vasoconstrictor acting locally. In nitroglycerin we have a great vasodilating agent also having a local action. We thought it would be interesting to see the effect of mixing one drop of adrenalin solution with ten drops of one-per-cent alcoholic solution of nitroglycerin. Fig. 7 shows the effect. The adrenal retains the mastery, and the blood-pressure ascends.

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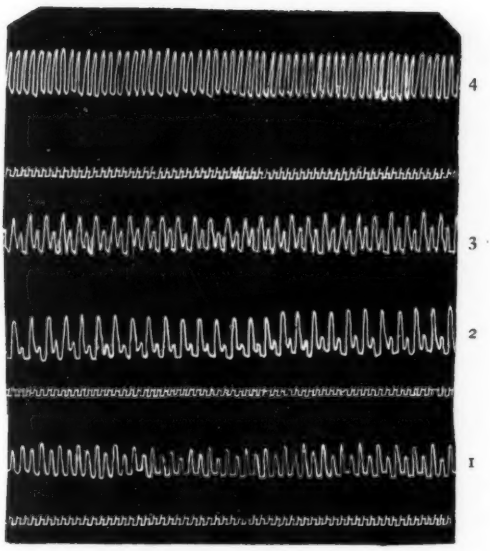


FIG. 1.—Turtle's heart, suspended by lever. 1, normal curve; 2, 3, 4, curves after the gradual application to the heart of seven drops of adrenalin solution.

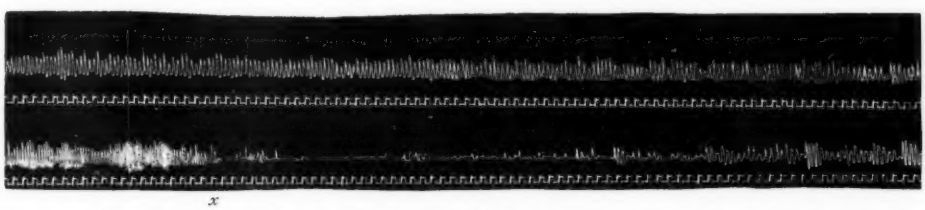
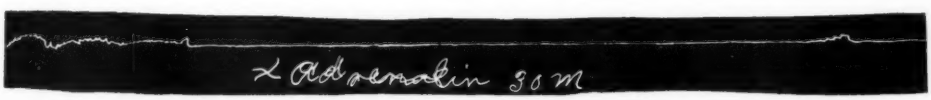


FIG. 2.—*x*, Injection of 2 gtts. of adrenalin solution per jugular; it was the second injection. Before the second injection is seen a sort of Cheyne-Stokes respiration produced by the first injection in the rabbit. Read from left to right.

I.



II.

FIG. 3.—I, Dog. Arrest of peristalsis by 30 gtts. of adrenalin. II, Dog. Arrest of peristalsis for a minute and a half by 20 gtts. of adrenalin solution. The minute curves are cardiac pulsations.

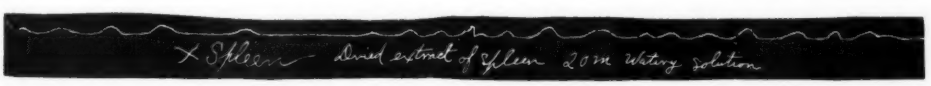


FIG. 4.—Dog.

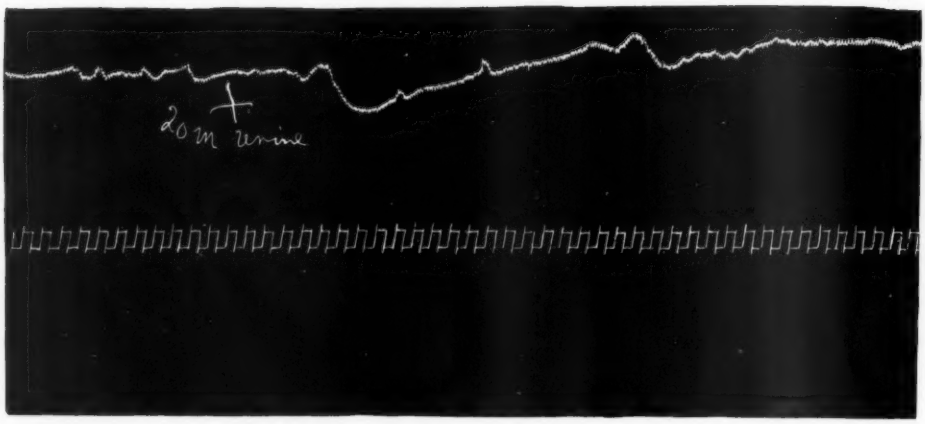


FIG. 5.—Cat. 100 minims of adrenalin solution injected in doses of 20 minims at intervals. One hour after the last injection the urine was drawn and 20 minims injected into jugular. Showing a momentary fall and then a rise of arterial tension.

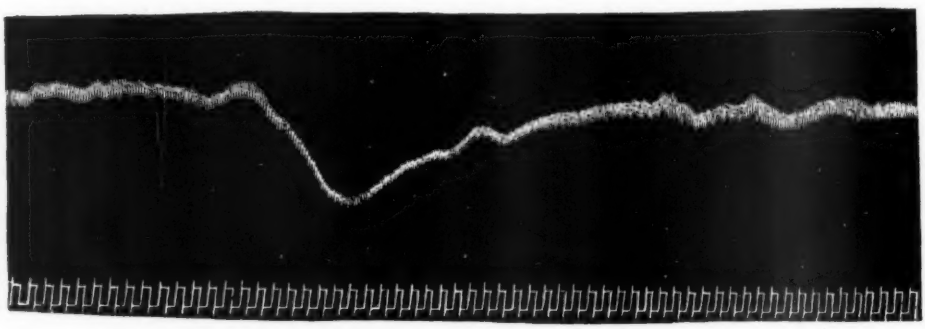


FIG. 6.—Cat. 20 minims of normal urine injected per jugular, causing fall of arterial tension.

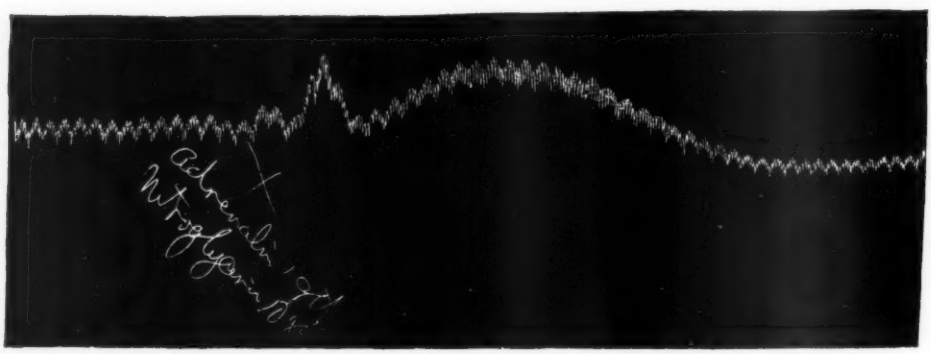


FIG. 7.—Cat. One drop of adrenalin solution and 10 drops of one-per-cent solution of nitroglycerin, mixed, and then injected per jugular.

The Therapeutic Gazette

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Leading Articles.

THE ABUSE OF THE BROMIDES.

A number of years ago Dr. S. Weir Mitchell reported to the Association of American Physicians a series of cases in which the administration of the bromides produced serious untoward effects, and even maniacal delirium. A careful examination of literature of this subject at that time convinced the writer of this editorial that a larger number of cases of this sort occurred than was generally recognized, and as a result of this conviction he instituted a collective investigation amongst eminent neurologists and alienists of this country, and gathered a considerable amount of information, which was published in the THERAPEUTIC GAZETTE of June 15, 1897. The result of this investigation was to prove that the nervous disturbances produced by the bromides were far more common and more deleterious than was generally recognized by the profession, and the superintendents of Asylums for the Insane, far and wide, expressed a positive conviction that if the profession would administer these preparations less frequently, patients suffering from epilepsy and insanity would be greatly benefited; and institutions designed for the relief of these conditions would be able to produce beneficial results far more rapidly than they could when weeks were often required to rid the patient of the effects of massive doses of bromides which they had received from the general practitioner.

In the issue of *American Medicine* of November 29, 1902, we note with interest an article upon the abuse of the bromides in the treatment of mental disease by A. R. Defendorf, of Middletown, Conn., written with the object of emphasizing the views which we have already expressed in the early part of this editorial. He reports five cases in which the administration of the bromides resulted in evil consequences, and quotes literature, much of which was embodied in the article which we speak of, and which he has apparently overlooked. It is wise for physicians to bear in mind that even such harmless drugs as the bromides nevertheless can do harm, if given in large quantities for too long a time.

The present issue of the GAZETTE contains a valuable symposium on this subject.

THE VALUE OF REST IN THE TREATMENT OF DISEASE.

On more than one occasion when we have been discussing in these columns the treatment of valvular disease of the heart, we have endeavored to emphasize the importance of rest. It is remarkable how frequently physicians are content to administer digitalis and other cardiac stimulants in the treatment of cases of threatened rupture of compensation in valvular disease without at the same time insisting upon the greatest possible degree of rest which is consistent with comfortable existence. We have no doubt that in very many cases physicians fail to achieve the best results because they ignore the value of rest in the treatment of such cardiac conditions, and were we given the choice of treating all cases of ruptured compensation by drugs or by rest in bed we would undoubtedly choose the latter

therapeutic measure, since, nearly always, patients will be benefited more largely by relieving the heart of strain than they will by the use of drugs while the strain continues. Careful thought devoted to this matter will also show that there are other pathological conditions for which we are wont to prescribe drugs which can be equally benefited by this plan. Cases of aneurism and cases of failing heart due to high arterial tension can often be benefited by rest and the use of a low diet. Not long since Dr. Perry, of Birmingham, England, read a paper which is published in the *Birmingham Medical Review* for April, 1903, in which he emphasized forcibly the necessity of rest in a good many pathological states, and he pointed out that many members of the profession are much more definite in their views with regard to the use and value of drugs than in their views as to the proper value of rest as a therapeutic agent, and that they are apt to think of digitalis and strychnine rather than the recumbent posture. He also quotes Mr. Hilton's well known classic upon "The Therapeutic Influence of Rest, and the Diagnostic Value of Pain," which is chiefly devoted to surgical conditions.

It must be manifest to every one that during the course of acute disease, rest, in the great majority of instances, is absolutely essential. The physician who permits a patient suffering from one of the acute infections to remain out of bed is usually guilty of lack of caution, to say the least, since by this laxity of discipline he fails to preserve bodily energies and permits a waste of vital force which may be needed later in the illness. Many of the drugs which we are wont to give in cases of acute inflammation may also exercise part of their influence, at least, by the rest that they produce. It is scarcely credible, for example, that in a case of inflammation of the bowels opium does good simply by checking the discharge, or by diminishing the inflammatory processes by any direct influence. On the contrary, there is every reason to suppose that the greatest good from the use of this drug arises from the fact that it stops peristalsis and so permits rest to the inflamed intestines; and bismuth, which is also used for a similar purpose, also probably acts in a somewhat similar manner. Indeed, as Dr. Perry well points out, part of the advantage which accrues from the use of digitalis is due to the fact that as this drug slows the heart it in one sense gives it a certain amount of rest.

Another condition in which rest is very essential is chorea. Severe cases of chorea should always be kept in bed away from excitement, and it is remarkable how such cases will improve, even when they do not receive arsenic, if the rest treatment is insisted upon. Again, it is often possible to provide certain organs with what may be called physiological rest—partial or complete. Thus, in gastric cancer and gastric ulcer, foods which require great gastric activity should be carefully avoided. It is also of interest to remember that sleep, which we are wont to think of as being a form of rest for the nervous and muscular system, is also restful to every other portion of the body, since every function diminishes its activity during this process; the circulation and respiration becoming slower, the digestive mechanism diminishing in its activity, and the secreting organs being less active.

THE INFLUENCE OF HIGH ALTITUDES UPON THE RED BLOOD CELLS.

It is not many years since it was first noted that the removal of an anemic patient to a high altitude frequently resulted in a very considerable increase in the number of red blood cells which could be counted in each cubic millimeter of his blood, and the theory was advanced that this increase in the oxygen-carrying portion of the blood was due to the rarefied air, since it required a greater number of corpuscles to transmit the quantity of oxygen which was necessary for the maintenance of normal oxidation processes. More recently the view has been urged that the increase in the number of red blood-corpuscles is often but temporary, and that it is apparent and not real, the changed conditions surrounding the patient resulting often in an increased activity of the heart and an altered circulation in the peripheral blood-vessels whereby a greater number of corpuscles can be obtained by the ordinary pricking of the finger or lobe of the ear.

This matter, which is of some import-

ance, is once more brought to our attention by an article which appeared in the *Journal of the American Medical Association* of May 2, 1903, in which Weinzirl and Magnusson report the results of their experiments designed to throw more light upon the question at issue. We have also read with interest the views expressed by Stengel in *Progressive Medicine* for June, 1903, for he reviews in this publication the earlier experiments of Campbell and Hoagland. The conclusions arrived at by Weinzirl and Magnusson from a large number of experiments, most of which were made upon rabbits, make them conclude that the increase in the number of red corpuscles which apparently ensues upon a residence in a high altitude is temporary, and that after the lapse of several weeks the blood-count again becomes normal; and furthermore, they think that the temporary increase is due very largely to the change in the temperature factor, and not to diminished barometric pressure, as is generally held. It is to be recalled, on the other hand, that Campbell and Hoagland, experimenting with Belgian hares, found a progressive increase in the number of corpuscles as the altitude became higher, and this increase continued during the three weeks that they were in the mountains. They believe that the diminution in barometric pressure is the main factor concerned, and therefore their conclusions are directly opposed to those which we have just quoted.

It has been asserted by Aberhalden that while it is true that the corpuscles appear in increased numbers in the field of the microscope, nevertheless this change is relative and does not indicate a new formation of cells, and he thinks with Bunge that going to a high altitude results in a contraction of the vascular system whereby the serum is pressed out, but the number of blood cells remains unchanged, and thus a relative increase is produced by concentration. Stengel is of the opinion that the increase is apparent and not real, and that the increased number of red cells found in a cubic millimeter of blood under the microscope is due to what he calls "centrifugation"—that is to say, it is due to a determination of the increased quantity of blood to the peripheral blood-vessels. While he may be correct in this view, we cannot help feeling that other factors must be in play, for there can be no doubt that many of these individuals not only have an increase in the number of the red cells but also an increase in general nutrition when at a high altitude, and this general improvement in nutrition would naturally be accompanied by actual increase in red corpuscles. Some other investigators, too, have seemed to show that there is a general increase in all forms of cell growth under these circumstances.

Positive conclusions, therefore, in regard to the influence of high altitudes upon the number of red corpuscles cannot be advanced at the present moment. The most that we can positively say is that the number on the field of the microscope is distinctly increased. We doubt whether studies made of animals' blood at high and low altitudes possess as much value as has been accorded to them. But we do know that anemic, tubercular patients often improve marvelously at high altitudes and rapidly become plethoric and ruddy under no medicinal treatment, when the most careful medication at low altitudes has failed to improve their general health.

THE USE OF RED LIGHT IN THE TREATMENT OF SMALLPOX.

From time to time in various departments of the THERAPEUTIC GAZETTE we have published information in regard to this method of preventing the pitting of smallpox, and therefore we have read with much interest an article published in the *Journal of the American Medical Association* by Dr. Jay F. Schamberg, in which he makes an examination into the claims of this method of procedure. After pointing out that the treatment of smallpox by red light was resorted to several centuries ago in England, he proceeds to dissect the so-called Finsen theory of employing these rays, and he quotes his own experience, in the Municipal Hospital of Philadelphia, which, though limited, was sufficient to entirely destroy his confidence in this method of treatment. The room which was employed was red in every particular. The window-panes were of a ruby-red color, the gas-jet at night was surrounded by a red globe, the walls were painted deep red, and a red curtain covered the entire side of two doors so as to completely ex-

clude the light of day. Two patients suffering from smallpox with profuse eruptions were placed in this room about the third day of the disease before the lesions had become vesicular, yet in neither instance did the disease pursue a course in any way different from that of the patients treated in the regular wards. One of the patients died, and the other recovered with the most disfiguring scars. Other instances are cited by Dr. Schamberg in which this method of treatment has failed, and he evidently believes that in those instances in which it has done good the results have been due to the mildness of the malady rather than to the method of treatment.

THE ROLE OF ANESTHETICS IN THE PRODUCTION OF SHOCK.

Our readers will remember that very recently we published an editorial article in which we called attention to the excellent researches made by Dr. Crile concerning the development and treatment of surgical shock, and the means which should be introduced for its prevention. In that editorial we pointed out that the views of Dr. Crile, while chiefly based upon his own researches, were by no means new, and that several teachers of medicine in Philadelphia had for many years enunciated views identical in many respects with those which he has placed so recently before us. There can be no doubt, however, of the value of his experiments: first, because he has brought forward results which confirm older views; again, because he has developed new facts in connection with them; and finally, because his studies have called attention once more to an important fact which had been largely ignored.

Thus there can be no doubt whatever that many cases of surgical shock are produced chiefly, if not entirely, by the anesthetic which is employed rather than by the operation itself. In some instances this is because the person who administers the anesthetic is not skilful in its use. In other cases the patient is unusually susceptible to the drug, and in still others the operation is so prolonged that evil results necessarily occur.

Fifteen years ago the writer of this editorial published a series of records showing that the use of ether and chloroform, particularly ether, resulted in a very great loss of body temperature, sometimes amounting to several degrees, and doubtless this loss is in part due to the shock to the nervous system which is produced by the use of the drug. The most recent contribution to this interesting and important subject is one which has been made by Turck, who has gone further than other investigators, and who gives us in the *Journal of the American Medical Association* of May 2, 1903, the results of a large number of experiments which he has made. In the first place he confirms the views we have already insisted upon, namely, that the circulatory disturbance is a direct result of the chloroform or ether acting on the vasomotor centers, and also that the prolonged use of either of these drugs results in a fall of blood-pressure and loss of body heat. But more important still, he thinks that by their action upon the tissues of the body chloroform and ether result in the development of toxins directly or indirectly, which produce a form of autointoxication during which blood-destroying bodies are formed. He also thinks that he has proved that the administration of ether and chloroform results in a lessened resistance of the blood serum to bacterial toxins and in a diminution in its bacteriolytic power. Some of the other views which he enunciates do not as yet seem to us to be proved. But the ones that we have mentioned are an interesting addition to our knowledge of a subject which manifestly needs still further study.

RENAL DECAPSULATION FOR CHRONIC BRIGHT'S DISEASE.

In spite of the brilliant reports of renal decapsulation as applied to the treatment of chronic and incurable Bright's disease, current literature gives us no reason to believe that operative procedure has been widely adopted. A personal knowledge of the work of young and ambitious surgeons in any large center will demonstrate the fact that the operation has been many times carried out. It is fair to infer from the failure of operators to publish their reports that the results have not been even remotely similar to those obtained by Edebohls. It is interesting to note that this

surgeon still remains as sanguine and enthusiastic as ever concerning this method of treatment, which originated with himself, and has certainly been practiced more frequently by him than by any other surgeon. More than two years ago he reported eight cases of cured chronic Bright's disease. He has been able to collect from literature since that time nine cases operated upon by seven different American surgeons, but states that the period of observation intervening between operation and report in those who survived was too short to admit of any deductions of great practical value.

During the year 1902 Edebohls has operated upon thirty-two additional cases of chronic Bright's disease, in each of which he performed decapsulation of both kidneys at one and the same sitting; his total experience up to the end of 1902 embracing fifty-one cases. Of the thirty-two cases of advanced chronic nephritis operated upon during 1902, very few were uncomplicated or but slightly complicated, nearly all presenting minor, greater, or extreme cardiac and vascular degeneration, arteriosclerosis, hypertrophies of all degrees up to the point of non-compensation, beginning dilatation, pericarditis, and endocarditis. Edebohls states that presuming a reasonable familiarity and experience with renal surgery in general on the part of the operator, there are three conditions the presence or absence of which makes renal decapsulation a comparatively difficult or easy operative procedure. The first of these conditions, great length and obliquity of the twelfth rib, with narrowness of the space between last rib and ilium, can be materially overcome by proper posturing of the patient, as on the author's kidney air-cushion, for instance, and by a slight modification of the obliquity of the incision. The second factor upon which the ease or difficulty of the operation depends is mobility of the kidney to be operated upon, or its firm attachment in its normal site well up beneath the ribs. In the latter event only a small surface of the lower pole of the kidney can be exposed, and even this meager approach is sometimes accomplished only under the greatest difficulties. The procedure under these circumstances is to incise the capsule proper at any portion of the surface of the kidney that can be reached, to seize the edges of the capsule wound with forceps, and to complete the separation of the capsule proper from the kidney, in the depths of the wound. For detaching the capsule proper from the kidney, especially if the separation must be done in the depths of the wound beyond aid from the sense of sight, the smooth index-finger of the rubber-gloved hand has been found to be the very best instrument. The third condition influencing the facility of renal decapsulation is connected with the more or less firm attachment of the capsule proper to the kidney. In the parenchymatous and diffuse forms of chronic nephritis the capsule will generally be found easily separable from the kidney, while in cases of chronic interstitial nephritis the connections between capsule proper and kidney are frequently of a firm, densely fibrous character. As the kidney tissue is generally very brittle and friable as the result of long-standing inflammation, great caution and gentleness are necessary to avoid the danger of tearing away pieces of kidney or of fracturing the organ during attempts at decapsulation. The views upon renal tension as an element in chronic Bright's disease in a previous publication of the author's have but received confirmation as the result of increased experience and observation.

Edebohls regards an hour as the limit of time to be allowed for the decapsulation of both kidneys for chronic Bright's disease. He mostly requires not longer than half this period, counting from the first incision to complete closure of both wounds ready for the application of dressings. He closed his wounds without drainage, and obtained primary union in all but one of sixty-four wounds made. Cases of chronic nephritis with infection did just as well in the way of perfect healing of the wounds as the cases of chronic nephritis without infection. Of the fifty-four patients operated on for chronic Bright's disease between 1892 and the end of 1902, Edebohls has been able to trace forty-eight. Fourteen died at periods of time after operation varying between twelve hours and eight years.

Two patients died an accidental death, one patient died of acute suppurative pyelonephritis, one of endocarditis, five of uremia, one of pneumonia, three of acute dilatation of the heart, while in one case

death was due to a combination of uremia and cerebral hemiplegia.

Of the fourteen deaths seven occurred at periods remote from operation, varying between two months and eight years, the average duration of life after operation in the seven cases being one year and eight months. The remaining seven deaths followed operation at periods varying from twelve hours to fifteen days, and represent the operative mortality in Edebohls's fifty-one cases, which may therefore be stated as 13 2-3 per cent. Three of the seven deaths representing the operative mortality were due to uremia, two to acute dilatation of the heart, while one was caused by pneumonia and one by combined uremia and cerebral hemiplegia. He summarizes his paper as follows:

The results of renal decapsulation for chronic Bright's disease in fifty-one cases, embracing forty-seven operations upon both kidneys and four operations on one kidney, show a mortality of seven patients within seventeen days after operation.

Seven patients died at periods after operation varying between two months and eight years, the average period of life after operation being one year and eight months.

Two patients do not show improvement satisfactory in every respect.

Twenty-two patients are in various stages of satisfactory improvement and progress toward health at periods varying between two months and fifteen months after operation. The urine of several of these is at present free from albumin and casts. They have not, however, passed the probationary period of six months of normal urine, before the expiration of which no patient is entitled to a place on the list of cures.

One patient, after a cure extending over a period of four years, again has chronic Bright's disease. One of her kidneys only was operated upon.

Nine patients were cured of chronic Bright's disease and remain cured at periods after operation varying from one year and nine months to ten years, the average duration of cure being over four years.

Three patients disappeared from observation after leaving hospital, and no trace of them can be found.

Edebohls's paper simply accentuates the very strong position which he has previously taken concerning the value of renal decortication. The operation has a philosophical basis, and apparently offers hope in a disease which heretofore has been regarded equally beyond the helping power of either physician or surgeon. The results obtained by others have not corroborated Edebohls's findings. The mortality has been large, and even when patients have recovered, cure has not followed.

THE INTRAVENOUS INJECTION OF FORMALDEHYDE AS A MEANS OF COMBATING SEPSIS.

Mainly because of the attention directed toward this method of treatment by popular and pseudoscientific articles which have appeared in the public press, there has been excited in the medical profession a wide-spread interest in formaldehyde when injected into the general circulation, as a means of combating septic infection, and a hope, thus far not justified by carefully conducted clinical tests. There is an excellent and timely article by Baner in the *New York Medical Journal* of March 21, 1903, upon this subject, who quotes Fortescue-Brickdale as follows concerning intravenous methods of medication in general: "The idea that drugs might advantageously be administered by direct injection into the circulation was first started by an English mathematician and architect, and has had its latest exponent in an Italian cabinet minister. Sir Christopher Wren, in 1656, was the first to carry out the 'noble anatomical experiment,' and the medical profession has coquetted with the method ever since—exaggerated enthusiasm for it alternating with absolute neglect."

Barrows calls attention to the fact that powerful bactericides have a more or less destructive effect upon the delicate tissues of the blood, and that even the elaborate experiments of Bacelli, which at one time were supposed to herald a new era in the treatment of syphilis, have not actually marked any therapeutic progress. He notes that in spite of the intensely irritating qualities of formaldehyde, Maguire in 1900 found it practicable to inject intravenously 50 cubic centimeters of a 1-to-2000 solution of a pure gas, and subse-

quently employed solutions as strong as 1 to 500 in the human being, and 1 to 200 in the rabbit. Normal saline solution was used in preparing these injections, and they were given by simple puncture of the vein with a large hypodermic needle. Maguire stated that he had treated by this method about 200 cases of pulmonary tuberculosis in all stages, and apparently with most gratifying results. But a later communication was characterized by much less optimism.

Barrows's case, which excited such wide comment and which was really responsible for a revival of interest in this method of treatment, was briefly as follows:

A negress, aged thirty-six, exhibited the morning after having been delivered of a dead and macerated fetus, and having been cleansed by a bichloride douche, a temperature of 108° F. The uterus was washed out with hydrogen peroxide, and was later curetted. The patient remained septic, and her blood showed the presence of streptococci. Barrows gave an intravenous injection of 500 cubic centimeters of a 1-to-5000 aqueous solution of formalin. The symptoms were bettered at once, temperature falling finally to 95° F. It rose, however, and a second injection of 750 cubic centimeters of the same solution was given. In twelve hours the temperature dropped to normal, and the patient promptly convalesced.

Waitzfelder reported a somewhat similar case, the blood showing the presence of streptococci. This patient's average temperature was about 105.5° F., and had three separate times fallen below normal following the hypodermoclysis of normal saline solution, but within twenty-four to thirty-six hours in each instance had risen as high as ever. It was then decided to try the intravenous injection of formalin, and the patient received 750 cubic centimeters of the 1-to-5000 solution. The temperature again fell below normal, but in twenty-four hours had reached its former height. After a second injection of double strength—that is, 1 to 2500—the patient became rapidly cyanotic, so that the formalin had to be stopped. Waitzfelder believed from the subsequent course of this case that the fall of temperature had not been due to the germicidal action of the formalin, but to the entrance of a quantity of watery fluid into the circulation.

Baner administered intravenously formalin injections to a patient who exhibited profound septicemia with streptococci in the blood, in consequence of an infected scalp wound. He first injected 250 cubic centimeters, which was followed by a slight betterment. The second injection with 750 cubic centimeters was apparently without marked effect. This was a case of pure streptococci bacteriemia, and admirably suited to test the practical results of the method; these were practically negative.

Ulcerative endocarditis seemed to be particularly suited to the formaldehyde treatment in Sherman's experience, the case exhibiting streptococci in great numbers and in pure culture. The injections were perfectly futile.

As to the laboratory work done in this relation, it is interesting to note that rabbits inoculated with an emulsion of anthrax bacillus, and then subject to intravenous injections of antiseptics, among them formaldehyde, perished not only as rapidly but as a rule sooner than untreated control rabbits, from which Fortescue-Brickdale concludes that injections with non-toxic doses are not protective, and that larger doses depress the infected rabbits so that they die sooner than untreated animals. Brickdale states that in view of the results described and those abandoned by former investigators, it seems useless to continue trying to apply clinically a method which is by no means free from special dangers and difficulties, and is at present unsupported by any experimental evidence either as to its present advantages or future prospects.

Barrows's conclusion to his paper is particularly valuable, since while it utterly discountenaces the value of intravenous antiseptic treatment of infective diseases, it points out the method by which these intravenous injections may be distinctly serviceable, and may indeed be life-saving. He says: "From the available facts it seems improbable that formaldehyde used intravenously has a specific value in septicemia. There is one thought, however, which is suggested by the behavior of the cases so treated, which is that we are perhaps too often forgetful of the intraven-

ous route in cases of intense toxemia, and rely too much upon the hypodermoclysis and the rectal enema for that dilution of the toxins which gives the poisoned tissues a breathing spell, as it were, and enables them to keep up the battle. The intravenous injection of antiseptics probably does not kill the bacteria in the blood in septic cases. The normal saline by the same route will do this equally well and with less probability of injuring the delicate structures of the blood."

Reports on Therapeutic Progress

TREATMENT OF TROPICAL DYSENTERY.

To the *Australasian Medical Gazette* of December 20, 1902, GOLDSMITH contributes a paper in which he has the following views to present concerning this important subject, about which our columns contained much useful matter last year. He says that ipecacuanha is highly spoken of in India and Burmah for the treatment of dysentery, and probably acts by increasing the flow of bile, rendering the motions more fluid, and probably has a germicidal action as well. In the earlier stages of an epidemic the author tried ipecacuanha several times, but in only one instance could the result be said to be satisfactory, and the resultant nausea was so frequently distressing to the patient that in the end he discarded it altogether in favor of the purgative sulphates. On his way to London from Australia he met Captain Longhurst, R. A. M. C., who had had considerable experience in dysentery both in Burmah and South Africa, and he informed the author that though in Burmah he was convinced that the ipecacuanha treatment was the better, since his arrival in South Africa he had found that there the sulphate was more effective. The probability is that there are two types, in one of which ipecacuanha is indicated and in the other sulphate treatment, and in this matter more accurate knowledge of the types is needed. Simaruba bark infusion has been tried by the author, according to the Shanghai formula for preparation, in acute cases with no very great success. He believes it is more suitable in subacute cases where the seat of the disease is the cæcum and ascending colon than where the sigmoid flexure is affected. Bismuth is very useful in the subacute or chronic cases where the acute symptoms have passed off, leaving a peculiar irritative state of the intestines. In these cases he gave 15 to 20 grains of the subnitrate with 5 grains of compound powder of ipecac in mucilage of tragacanth and water every two or three hours with satisfactory results.

To render the diseased bowel aseptic as far as possible, and to destroy the disease-producing germ, injections per rectum are, he thinks, valuable when the disease does not extend backward beyond the descending colon. In acute cases plain hot water or boracic acid injections give great relief for several hours, but do not appear to cut short the attack to any appreciable extent. Methylene blue, however, is a strong germicide, and harmless to the patient, so the author has tried large enemata, consisting of methylene blue 9 grains, warm saturated boracic acid solution 2 pints, and got such satisfactory results that for simple sigmoid disease he lately used it as a routine in conjunction with the sulphate of magnesium treatment, and this treatment in such cases cannot, in his opinion, be improved upon. Where tenesmus was marked he usually preceded the injection by half an hour with a hypodermic of morphine. The enema should be injected slowly, and if there be still any expulsive effort the buttocks (which are raised on a pillow) should be pressed together until the spasm passes. The fluid then can be easily retained for ten or fifteen minutes; it can then be wholly or partially discharged. The relief from these injections was very marked, and two at a twelve hours' interval usually sufficed. The motions generally showed traces of color for twenty-four hours, with a marked diminution or complete cessation of amebæ in the discharges. Usually sufficient methylene blue was absorbed by the bowels to give the urine the distinctive color. Besides cutting short the disease, a thorough disinfection of the bowel as described above would, by destroying the ameba, render the patient less liable to subsequent abscess of the liver. Solutions of permanganate of potash in the same way would have a somewhat similar effect; but the author's results from the methylene

blue were so good that he did not need to try any other. Nitrate of silver injections are beneficial in the subacute or chronic stage, but their astringent action contraindicates them for the acute stage of the disease.

Where the bowel is diseased too high up to be reached by injections per rectum, insoluble antiseptics given by the mouth would probably be beneficial. Bismuth, on account of its astringent properties, would not be suitable for the acute stage. Probably small doses of thymol or an allied antiseptic would be beneficial, but in this the author has had no experience.

THE TREATMENT OF TYPHOID FEVER BY THE FLOWERS OF SULPHUR.

CARAMANO states in the *Journal des Praticiens* of November 29, 1902, that the flowers of sulphur have been employed with advantage in the treatment of typhoid fever, the dose amounting to about 15 grains every two hours. These doses are said to be taken without any inconvenience, and are particularly valuable in those cases which suffer from constipation. The advantages claimed for this method of treatment are that while it diminishes the temperature it also produces a general improvement in the condition of the patient. It also exercises a favorable influence upon the intestinal mucous membrane.

MELENA NEONATORUM.

OSWALD reports fifteen cases of melena neonatorum occurring in 6500 births which have taken place since 1896 in the Woman's Hospital at Basel. Four of these cases recovered; two were treated with injections of two-per-cent gelatin solution. In one case 20 cubic centimeters were given in the morning, followed by 5 cubic centimeters at night. In the other, 5 cubic centimeters were given both morning and evening. Of the other two cases, one was treated by means of an ice-bag applied to the abdomen; the other received in addition to this treatment subcutaneous injection of ergotine. Oswald considers these cases most instructive, as they show how exceptionally careful one must be in drawing conclusions concerning the result of therapeutic measures. He asks if the two cases which were treated with gelatin might not have recovered on the same treatment which the other two received. Professor Von Herff, however, feels quite satisfied that one case was saved by the use of gelatin. Such case was a premature child which Oswald thinks might have perished even if it had not been affected with melena neonatorum.—*Münchener medicinische Wochenschrift,* November, 1902.

THE TREATMENT OF CHRONIC BRONCHITIS BY ICHTHYOL.

In the *Journal des Praticiens* of November 29, 1902, DE BRUN, of Beyreut, recommends the employment of ichthyol internally in the treatment of this disease. He prescribes as much as 15 grains of ichthyol each day, made into ten pills with some inert powder, and he asserts that under these circumstances the results are "truly marvelous," cough diminishing, and the patient passing a good night undisturbed by the coughing and expectoration which had previously troubled him. The râles were less in number, there was a distinct improvement in the vesicular sounds, and the dyspnea also disappeared. Another method of employing this drug consists in its use in the following formula:

> Ichthyol, 30 grains;
> Glycerin,
> Syrup of orange, āā ½ ounce;
> Water, 3 ounces.

A half-teaspoonful to one teaspoonful of this mixture is given at a dose several times a day.

THE TREATMENT OF FOLLICULAR CONJUNCTIVITIS AND TRACHOMA.

Toward the close of an article on this topic in the *Medical Record* of January 24, 1903, ALGER says that it should be remembered that in this disease the essential element is lymphatic hyperplasia, and the treatment which has been found most successful has been based on the treatment of lymphatic enlargements in other portions of the body. First, so far as possible, the cause of irritation, whether chemical, mechanical, or bacterial, should be removed. This often involves not only

frequent irrigations of the conjunctiva with boric acid solutions, but should also consider so far as possible the physical conditions and surroundings of the child. Most of them are better for the use of cod-liver oil and iodide of iron. By far the best results have been obtained by applying with a swab, at least three times a week, a solution consisting of

℞ Ichthyol, min. xv;
Tr. iodi, f℥j;
Glycerini, f℥j.

Sig.: Apply to conjunctiva with brush.

Such treatment seems to be rational and productive of better results than any other method tried. As the conjunctiva improves, this solution is brushed in with increasing vigor. It is much less painful than either the bluestone or the silver nitrate. On the alternate days an instillation of the following is made at home:

℞ Zinc. sulph., gr. j;
Vini opii, min. viij;
Aquæ destillati, f℥ss.

M. Sig.: One drop in each eye t. i. d.

Of course the result depends in a great measure on the home surroundings and care of the child, but a typical frog-spawn conjunctiva has been observed to become perfectly normal in three weeks. The use of the roller forceps is certainly a great time-saver, even though it generally involves some after-treatment. In children, however, their use requires a general anesthetic. Expression is not a necessary part of treatment, and the vast number of cases must be treated without it.

The treatment of real trachoma is a very different matter, and since one cannot predict in a given case the height to which the conjunctival hypertrophy will reach, he is equally unable to say whether the disease has been modified by his treatment or has simply reached its natural limit. In the same way the development of scar tissue is in direct proportion to the preceding hypertrophy, and may or may not have been influenced by treatment. Bearing in mind that in many cases a germ analogous to the gonococcus has been found, it would seem that in the acute cases the use of silver preparations is rational. In chronic cases it has frequently happened that the results of an acute inflammatory process such as that caused by the accidental inoculation of urethral pus or the deliberate use of an infusion of jequirity has been followed by improvement. If mangling the conjunctiva with trachoma forceps does any good, it is believed to be in this way. Personally the author has made use of the ichthyol, iodine, and glycerin mixture above alluded to, and if the results have not seemed better than under other plans of treatment, neither have they seemed any worse.

THE ADVANTAGES OF INOCULATION WITH PROFESSOR HAFFKINE'S PLAGUE PROPHYLACTIC.

A paper on this very important subject has appeared in the *Australasian Medical Gazette* of December 25, 1902, by HORNABROOK, who has had a large and interesting experience with this disease.

In dealing with the subject of the protection afforded by inoculation the author takes the town of Dharwar along with the town of Hubi; this was one of the first places where Haffkine's inoculation was performed on an extensive scale. In this town those persons who had been twice inoculated were allowed to remain in their homes, whereas the uninoculated were obliged to live in segregation camps. It would appear that the inoculated ran the greater risk by remaining in the infected quarter. Yet what do we find? Out of a population of 38,000 at the time of the outbreak of plague in that town in August, 1898, by January 4, 1899, 17,604 persons had been inoculated, 11,457 twice and 6,147 once—that is, more than half, for in the first fortnight of the outbreak over 10,000 persons fled from the town. Of those left in the town, among the uninoculated (by far the smaller proportion) there were 1189 plague attacks and 927 deaths, among the once inoculated 141 attacks and 55 deaths, and among the twice inoculated 41 attacks and 21 deaths.

It will thus be seen that even though the twice inoculated ran the greatest risk by remaining in their homes, yet the attacks among them were very few. Again, even if a person is attacked with plague after inoculation his chances of recovery are far greater than if he is not inoculated, the percentage case mortality in Dharwar being: uninoculated 77 per cent, once inoculated 39 per cent, twice inoculated

51.25 per cent. The reason that the mortality is higher in proportion to attacks among the twice inoculated to the once inoculated is that with the twice inoculated the majority of deaths were due to pneumonic plague, an extremely fatal type of the disease. The attacks, however, among the twice inoculated were in proportion much less than among the once inoculated. Of the 21 deaths recorded among the twice inoculated, 16 were due to pneumonic plague.

In the Dharwar Hospital, out of a staff of 32, about half were inoculated, and the remainder uninoculated. Of these latter, six contracted plague, four of the pneumonic type, and all died; two bubonic cases recovering. Of the inoculated, not one contracted plague.

REPORT OF 250 ADDITIONAL CASES IN WHICH NITROUS OXIDE GAS WAS USED ALONE OR AS A PRELIMINARY TO ETHER OR CHLOROFORM ANESTHESIA.

To *American Medicine* of February 14, 1903, GALLOWAY, of Chicago, has sent a report of 250 cases of nitrous oxide anesthesia for the purpose named in the above title. His experience leads him to highly recommend this practice, and he states that the time required to prepare the patients for operation in these 250 cases was as follows: 30 seconds, 1 case; 45 seconds, 2 cases; 50 seconds, 1 case; 1 minute, 10 cases; 1¼ minutes, 3 cases; 1½ minutes, 34 cases; 1¾ minutes, 3 cases; 2 minutes, 126 cases; 2½ minutes, 22 cases; 2¾ minutes, 2 cases; 3 minutes, 36 cases; 3½ minutes, 1 case; 4 minutes, 3 cases; 5 minutes, 3 cases; 10 minutes, 1 case; 11 minutes, 1 case; 13 minutes, 1 case; the average time being 2¼ minutes.

In no case, when ether followed, was gas continued for more than three minutes. In the case requiring ten minutes the patient had a heavy beard, and this probably admitted air under the inhaler sufficient to produce the excitement and struggle, during which the patient partly revived and had to be anesthetized with ether as if no gas had been used.

In one case it seemed impossible to relax the patient with ether, though there was no outcry or struggle, and after trying for twelve minutes chloroform was resorted to, with the result that anesthesia was quickly completed. In one case the patient, a woman, knocked off the inhaler before she was unconscious, and it required thirteen minutes to get her completely anesthetized with ether.

The calls for these 250 anesthesias were from forty-four operators, and the author has demonstrated the method in nineteen hospitals in Chicago.

When an operator has experienced or even witnessed the distressing effects which are often produced when a struggling patient is being anesthetized with ether, particularly if the patient is being "stifled," as so many anesthetists do it, and then has seen the quick and quiet way in which gas does its work, one would expect that he would never again allow ether to be used alone in his practice when it was possible to get gas.

Galloway quotes Dr. Joseph Price as defining an anesthetic as "an agent with which the patient is carried to the edge of death and held there while the surgeon does his work." To be carried to the edge of death is sufficiently terrifying at best, and no pains should be spared to rob the process of as much of this terror as possible. Nitrous oxide is a potent agent for cutting short if not abolishing this agony.

The author carries Dr. Price's figure of speech further and urges that the anesthetist should not hold the patient too far over "the edge of death" by the use of an overwhelming amount of the anesthetic, lest the patient slip from his grasp and fall into the abyss from which no power can rescue him. Furthermore, the patient should not be brought into this perilous position until the operator is ready to proceed with the operation, and he should not be maintained there one minute longer than is necessary to perform the operation expeditiously. Every minute the anesthesia is prolonged the danger increases, both from the immediate and the remote effects. He does not consider it justifiable for the operator materially to delay or suspend the operation, after the patient is anesthetized, in order to lecture to a class of students. The lecture would be just as impressive if delivered on a previous or later occasion. He was once obliged to keep an old man on a wet table and covered with wet towels,

under the influence of ether, for twenty-five minutes while the operator talked to a class of students about the operation to be performed.

If the anesthetist could be made to realize that he is holding a fellow being over the brink of a precipice down which he may be hurled by any lapse of attention or slip of judgment, surely he would have little heart for assumed or real indifference or for idle gossip with those around him.

THE EXTERNAL USE OF SALICYLIC ACID FOR RHEUMATISM.

According to the *Revue de Thérapeutique* of November 1, 1902, TIMIREFF, a Russian physician, has employed salicylic acid in the treatment of rheumatism by external application with success. One of his formulæ consists in

Salicylic acid, 2½ drachms;
Lard, 3 ounces.

To this may be added a little turpentine, and this ointment may be put about the inflamed joints; or the following formula may be used:

Salicylic acid,
Turpentine,
Lanolin, āā 2½ drachms;
Lard, 3 ounces.

According to Timireff, the acid is rapidly absorbed, irritation of the stomach is avoided, and this local application also possesses pain-relieving properties. If desired, the oil of gaultheria may be substituted for the acid, and salicylate of sodium be given internally in addition.

NOTE ON THE SALT STARVATION PRINCIPLE IN THE TREATMENT OF EPILEPSY BY BROMIDES.

CLARK states his view concerning this plan of treatment in the *New York Medical Journal* of January 10, 1903, and urges the importance of the hypochlorization diet treatment in conjunction with the bromides and organic bromine salts. Most epileptics are very fond of table salt as well as other ingredients of high seasoning. Many of them eat as much as three or four hundred grains of salt per day; consequently the body tissues are highly saturated with the chlorides. By under-salting or withdrawing salt from the epileptic diet, we reduce the sum total of chlorides in the body. It has been found by experimenting on animals and man that bromine can replace chlorine in the body tissues; therefore by sodium chloride starvation and the continual administration of the bromides we get an organic bromide compound acceptably fulfilling the physiological rôle of chlorine, and at the same time acting as a therapeutic agent of sedation in epilepsy.

This principle is not new; indeed, the idea was first brought forward by Hughlings Jackson in 1868, under the name of "substitution nutrition," but it was first actually applied to the treatment of epilepsy by Toulous and Richet three years ago, and has since been used successfully abroad and in this country to some extent. The author has used the plan in a modified form very extensively for the past three years, both at the Craig Colony and in private practice.

Ordinarily we know the dosage of bromide sufficient to control epileptic seizures is from 60 to 160 grains, but under the salt starvation method 20 to 60 grains is just as efficacious. The lowering of the dosage means a lowering of the possible toxicity from the drug, with its well known attendant evils upon mind and body. Then, too, the economic feature of the plan is obvious, as bromide sedation in epilepsy as well as in other neuroses must often be continued for several years.

It is especially to be recommended in those acute idiopathic cases which require such large doses of bromides given in the ordinary manner that fatal intoxication is imminent; in those in which even unusually high dosage of bromide is of little value; in those totally intractable to the bromide; and finally, in all chronic cases where a long-continued sedation is necessary to hold in partial check the severity and frequency of epileptic attacks. The diet should be especially arranged for palatableness, and consist of cereals, milk, and vegetables. The bromide of sodium should be given in the patient's food in place of table salt, as it is nearest like it in point of taste.

Quite recently the author has employed organic bromine in emulsion; especially in epileptics of poor physique this prepar-

ation more or less entirely replaced the bromide salts in the hypochlorization diet treatment. These new principles, however, do not obviate the necessity of constant use of hydropathy, massage, and general hygienic treatment.

In general, the results obtained from hypochlorization diet and the bromide treatment of epilepsy are the absence of "bromism," gastric irritation, constipation, and the mental hebetude common in the older forms of bromide sedation.

The author believes that the hypochlorization adjuvant principle is the greatest therapeutic advance since the discovery of the bromides.

SERUM TREATMENT OF TYPHOID FEVER.

CHANTEMESSE reports 507 cases of typhoid fever treated with his serum, in which there was a mortality of 6 per cent, and compares this death-rate with one of 19.3 per cent, an average obtained from 1192 cases occurring in fifteen different hospitals where his serum was not employed. He is convinced that the serum exerts a positive curative effect, and believes that by its early use he has aborted pronounced cases of typhoid fever. He also believes that its early use tends to prevent perforation. Hydrotherapy was employed in all his cases, but as the most favorable statistics show a mortality of 12 or 13 per cent under hydrotherapeutic treatment, he believes the low mortality in his own cases to be directly attributable to the effects of the serum. Local injections of one or two drops of this serum into post-typhoidal hyperostoses cause them to disappear very rapidly, even when they have been suppurating for years.

Animal experimentation has led Chantemesse to believe that the serum exerts its influence principally by exciting phagocytosis, but that it also possesses some direct antitoxic action. After typhoidal toxin is injected into animals which have previously required injections of the serum, a great increase of lymphocytes takes place in the splenic corpuscles and the bone-marrow. It was found also that animals which had received preventive injections of serum could withstand three times the ordinary fatal dose of typhoidal toxin. Because of its stimulating effect upon phagocytosis Chantemesse concludes that the serum is best applicable to recent cases in which the lymphocyte forming apparatus have not become profoundly poisoned, and are still able to react vigorously. —*La Presse Médicale,* Dec. 24, 1902.

POINTS IN THE TREATMENT OF TYPHOID FEVER.

To the *Medical Record* of January 10, 1903, H. P. LOOMIS contributes a paper in which he gathers together the method of treating typhoid fever in four of the large New York hospitals.

Directions are given that the patients' stools be disinfected by a solution of formaldehyde 1:40; that the personal linen and bedclothes be soaked in a solution of carbolic acid 1:20 before they are sent to the wash; that the nurse should wash her hands in a solution of bichloride 1:1000 after attending to the patient.

The diet of the patient should be as follows: (1) During the course of the disease, milk exclusively, either with lime water, peptonized or prepared. (2) At the end of the disease, when the temperature has reached normal, or is running under 100°, the following articles of diet are given; soft-boiled eggs, chicken, beef sandwiches; and finally, at the end of four days, a chop can be added.

When stimulation is indicated by the pulse, heart action, and general condition of the patient, whiskey in half-ounce doses is the form used. Strychnine should only be given when whiskey is not holding the patient; it is not given as a routine practice, but more to reënforce whiskey. Digitalis is only given when there is evidence of right heart failure, as shown by the evidence of pulmonary edema, blueness of the extremities, etc. It is better given hypodermically.

The Brand bath should be given in all cases when the temperature reaches 103°. It should be ordered every four hours. The technique is as follows:

The patient receives half an ounce of whiskey (diluted) before the bath and a glass of hot milk after. The temperature of the bath should be 70°, and gradually reduced by ice to 65°. The patient should remain in the water fifteen minutes and

should be constantly rubbed. A cold compress or ice-cap should be placed on the head. On removal from the bath the patient should be dried off by a sheet, which is removed, and then the patient is wrapped in blankets. At the end of half an hour the temperature is taken and noted on the chart, the effects of the baths being recorded by a red line. The 4 A.M. bath can always be omitted with advantage, and in most cases the 12 P.M. bath also.

The following is the treatment for the special symptoms that may develop in the course of typhoid fever: (1) Headache —ice-cap, acetanilid, and caffeine. (2) Sleeplessness—trional. (3) Constipation —no cathartics should be given beyond the initial dose of calomel. The bowels should be moved, if necessary, only by daily enemata. (4) Tympanites—ice-coil, turpentine stupes; 5 minims of turpentine every three hours internally. (5) Hemorrhage—restrict milk to small quantities, stop enemata, apply ice-coil, give morphine hypodermically. (6) Perforation—operate at once.

When convalescence is established, the patient can be allowed to sit up in bed after the temperature has been normal one week; he can get out of bed after it has been normal ten days; and can leave the house two weeks from the time he first gets out of bed. The patient is allowed to return to a regular diet three weeks after normal temperature is reached; care, however, being exercised for six weeks in the eating of fruit.

DIET IN TYPHOID FEVER.

To the *Boston Medical and Surgical Journal* of February 5, 1903, SHATTUCK contributes his further views upon this important subject.

From 1886 to 1893 his hospital patients were given an exclusive milk diet until the temperature had remained at or below 99° for a week; since 1893 he has fed his typhoid patients according to their digestive power rather than according to the name of their disease, simply avoiding anything which contains, or can reasonably leave, a residue irritating or harmful to the ulcerated surface. Under the exclusive milk diet he had a mortality of 10 per cent in 233 cases; with the enlarged diet the mortality has been 8.45 per cent in 246 cases. If he is rightly informed, some of his colleagues at the Massachusetts General Hospital adhere to the purely liquid diet, some to a medium diet, no one going quite so far as he does in dietary freedom. Dr. Fitz's analysis shows that the mortality among the author's cases was less than among those of his colleagues who used a more purely liquid diet, and that relapse was 2.9 per cent less frequent in the liberally than in the rigidly fed. Fitz's paper brings the statistics up to 1899; Dr. W. H. Smith has completed them up to 1902, studying mortality, hemorrhage, perforation, and relapse in 563 cases. His research shows that neither hemorrhage, perforation, nor relapse is more frequent among the author's patients than among those more cautiously fed.

Dr. Shattuck states that he is familiar with and lays to heart Dr. Morton Prince's important paper showing the erroneous conclusions which may be drawn from any series of typhoid cases less than one thousand in number. His personal cases are only about one-half that number, nearly equally divided between milk-fed and generously-fed patients. He feels, however, that the evidence is sufficient to warrant further trial of a liberal dietary, inasmuch as this evidence strongly indicates that under such dietary mortality and relapse are less rather than greater, while hemorrhage and perforation are no more frequent. The testimony of nurses and house physicians corroborates his own convictions that under the liberal dietary the patients are more comfortable and have a shorter convalescence. He will, therefore, with a mind open to conviction, persevere in feeding his typhoid patients with reference to their digestive power, avoiding substances leaving an irritating residue, and hope that others may be encouraged to do likewise. He does not detail the lists of food which he employs, deeming the statement of a principle sufficient.

Of the 563 cases of typhoid at the Massachusetts General Hospital from 1899 to 1902, the mortality was 8.8 per cent; this mortality, as contrasted with 14.3 per cent in 3538 cases analyzed by Dr. Fitz, at

first seems striking; but Dr. Smith suggests that this decrease may be due in part at least to the fact that a large number of patients with mild typhoid have entered late in the disease. A Widal reaction on or soon after entrance has aided in proving the existence of a mild typhoid. It will be interesting to observe if the mortality in other reported series of typhoid where a routine blood examination is made does not show a diminution.

THE TREATMENT OF EXOPHTHALMIC GOITRE.

The *Lancet* of December 13, 1902, contains an article by MURRAY, in which he gives the following advice:

No hard-and-fast lines can be laid down for the treatment of this disease. The symptoms vary so much in different cases that in each one the treatment has to be adapted to the special symptoms present and the social position of the patient. In the first place comes the general hygienic treatment of the patient. If the symptoms are severe absolute rest in bed for three or four weeks is essential. In cases in which the nervous symptoms are predominant, or when there has been rapid emaciation, rest in bed may be combined with isolation, liberal feeding (especially with milk), massage, and electricity; in other words, a course of what is known as "Weir Mitchell treatment" is of great service. In less severe cases, and in cases in which rest in bed has already been carried out, it is well to regulate the patient's mode of life as far as circumstances permit of it. At least twelve hours should be spent in bed, from 10 P.M. to 10 A.M., breakfast being taken in bed. In addition to this in many cases the patient should lie down from 2 to 3 P.M. and from 6 to 7 P.M. A quiet life in the country or at the seaside, as free as possible from excitement or effort, is most suitable. As much time as possible should be spent in the open air, partly reclining on a deck-chair and partly taking gentle walking exercise, which may be gradually increased from half a mile up to three or four miles a day, according to the progress made. As sufferers from exophthalmic goitre do not feel the cold easily and are not liable to catch cold, they can spend much time out-of-doors nearly all the year round.

Electricity is most useful in many cases, but is not sufficiently employed, owing to the modes of application recommended being too elaborate. The faradic current may be employed easily and efficiently by a method which was first described to the author by Sir Victor Horsley. Two flexible metal electrodes, about four inches long and two inches wide, covered with wash-leather, which are connected by a small strap and buckle on each side, are moistened and accurately applied to the neck. One electrode is placed in front over the thyroid gland, and the other over the back of the neck; the straps are then tightened so as to keep them in position. The electrodes are connected with the secondary coil of a small dry-cell faradic battery, and sufficient current is turned on to produce a distinct prickling sensation. The faradic current should be applied in this way for an hour each night and morning for several months. Not only do patients feel relieved for a time by each application of the current in this manner, but steady improvement has taken place under its continued use.

In many cases no special diet is necessary. When there is any emaciation a liberal diet is required, which may be supplemented by two extra pints of milk in the day. If there is great emaciation forced feeding may be necessary.

In a large number of cases, and especially in those which are seen in hospital out-patient practice, we can unfortunately carry out little more than medicinal treatment, and often in circumstances which are not at all favorable to recovery. Belladonna was frequently prescribed and was useful in some cases, but disappointment has often been experienced in the results of its use. To be of service in exophthalmic goitre any line of treatment should be steadily maintained for some weeks or even months, and patients often dislike to continue taking belladonna in sufficient doses to produce physiological effects. Convallaria has proved useful in cases in which the frequency of the pulse has been very high, and is more effectual in lowering the pulse-rate than any other cardiac tonics. Bromides are useful in cases in which there are marked nervousness and tremors. Arsenic is useful in nearly all cases, and may be combined with

other drugs with advantage. The best results are obtained by giving small doses of three or four minims of Fowler's solution three times a day for a month or two, or for the first three weeks of each month for five or six months. Of the animal extracts thymus and suprarenal tablets have both been of service. Thyroid extract is harmful, as it often exaggerates the symptoms, and should not be given in exophthalmic goitre. Special measures are frequently required for the treatment of urgent symptoms. The sudden attacks of diarrhea were readily controlled by laudanum and dilute sulphuric acid. Severe attacks of palpitation with very rapid pulse have yielded to the application of an ice-bag to the precordial area. Persistent vomiting in acute cases is difficult to treat. On the whole rectal feeding and the administration of morphine, either subcutaneously or by the rectum, gave better results than other lines of treatment.

TROPICAL DYSENTERY.

In the course of lectures now being delivered by Captain KIEFFER of the U. S. army upon tropical medicine at the Jefferson Medical College, and published in the *Philadelphia Medical Journal* of February 7, 1903, he has the following opinions to express about the therapy of tropical dysentery:

The local treatment of chronic dysentery is our mainstay, and, all things considered, is the most rational plan.

The manner of making the application is of considerable importance. The greatest difficulty to be encountered is the irritability of the colon itself, its intolerance of the injection. This is the chief objection to the use of local remedies in acute cases, and we will find, even in chronic cases, sufficient difficulty in overcoming it. We may find it necessary, at first, to anesthetize the rectum with a four-per-cent solution of cocaine or with a suppository containing cocaine or iodoform. We will very commonly discover that the full amount of the irrigation cannot be used at first, and that the ability to admit a large quantity of fluid will be attained gradually, beginning with a small quantity and increasing daily. These injections should never be given hurriedly, and should be either under the supervision of the physician, or in the hands of very competent attendants. The intention is to bring the medication in direct contact with the diseased surface; to do that the quantity of the fluid must be such that the irrigation will fill the colon and will reach quite up to the ileocæcal valve. The pressure must be such that the bowel will be moderately distended, so that the remedy may reach every part of the sacculations and flow between the folds of tumefied mucosa. To attain these ends the clyster must be from three to six pints. The fluid must run with very little pressure and very slowly. For all practical purposes, three feet should represent the extreme head of the hydrostatic column, and it should be as much less as is possible, in each individual case, to fill the colon. It has been shown that a fall of six to eight inches suffices in many cases. The injection must be stopped when there is pain. By this is not meant discomfort, since the filling of even a normal colon is attended with some degree of discomfort.

When we begin tropical treatment we will find that the irrigation may be rejected at once, and particularly is this the case if the introduction be made rudely or hurriedly. Hare advises that ten to fifteen minutes be allowed for the injection to flow in, and speaks of "sneaking" the solution into the bowel, as it were, and so prevent "angering" the colon—a very graphic description, that should be of the greatest instructive value. Further to facilitate the flow into the bowel, Kieffer has adopted the following routine: The patient is placed on his left side, buttocks elevated, and the rectal tube, well lubricated, is carefully introduced. Just here one can, by supervising attendants and insisting on gentleness, save the patient much pain. The lower rectum is sometimes exquisitely tender, and the harsh introduction of the rectal tube or syringe point may rouse the colon to the point of rejecting the fluid. This should not be considered a trivial point; it may, indeed, mean the success or failure of your whole plan of treatment. The solution is allowed to flow in very slowly, the left position being maintained for five minutes. The patient then slowly turns on his back

for another period of five minutes, and finally on his right side for a further five minutes. The tube is then gently withdrawn, the buttocks are lowered, and the patient lies quietly in bed, making an effort to retain the injection as long as possible. When it is finally voided, it should be done in the recumbent position. The reason of this is that in the erect or sitting posture the colon acts somewhat as a siphon, a particularly efficient one, when the walls are rigid, and empties itself not only more quickly, but with a degree of violence not always consistent with the diseased conditions. Abdominal massage should never be permitted during the injection, with the idea of diffusion of the liquid; three feet should be the extreme pressure limit, and we should either stop the injection or diminish the pressure when there is pain.

The temperature of the fluid has also some importance. It is very commonly advised to use the enema at or about 100° F. or the body heat. This temperature is supposed to be less likely to cause irritability of the bowel. In the earlier stages of local treatment this is probably true. The author is quite convinced, however, that once a degree of tolerance has been established, better results will be obtained, other things being equal, from either decidedly hot or very cold injections. We wake up a reaction that is quite valuable. Kieffer knew in the Orient an irregular practitioner who had considerable local reputation as a "dysentery doctor," whose routine treatment consisted in large enemata of iced water with opium and some vegetable astringent, and is convinced that in this mixture the cold water was the efficient agent.

The remedy of greatest value is silver nitrate. It is administered in a strength of from 20 to 30 grains to the pint. Of this solution three to four pints is carefully injected, using all the precautions already detailed. Osler advises larger injections, up to six pints. These injections are sometimes very painful and may be promptly rejected. With cocaine as a preliminary, and gradual increase, a tolerance is soon established. Manson advises the preliminary administration of a "minute dose" of castor oil. After the oil has acted the bowel is washed out with a large enema of a weak solution of sodium bicarbonate. When this has been completely voided the silver solution is introduced. This injection is commonly repeated at intervals of three or four days. As a rule improvement is pronounced. In certain cases, however, the silver salt causes marked irritation, and must then be abandoned for some other remedy. These injections are usually well borne, even for considerable periods, and, contrary to what we might be led to suppose, there is no tendency to the production of argyria. The study of the value of the newer salts of silver in this connection should be of great interest and may prove a valuable field.

Creolin has been used in the same manner in one-half to one-per-cent mixtures, and is a very valuable remedy, ranking next, perhaps, to the silver salt. It has several advantages: one is its self-lubricating quality; another is its deodorant property, a consideration of some importance when treating many dysenterics with fetid stools in a ward. Creolin should be given twice a day, morning and evening.

Copper sulphate, zinc sulphate, alum, have all been used in appropriate solution, but are not as valuable as the silver.

When the process is due to the amebæ, we have several special remedies. Quinine first suggested itself as being a typical protoplasmic poison, its action probably being identical in this respect with its action on the malarial parasite. Indeed, the laboratory experiments of Losch in this connection enabled him to suggest this remedy in amebic dysentery. The quinine solution is given in a strength of 1:5000 to 1:1000, in exactly the same manner as the silver injection. This remedy is of particular value in the comparatively early cases. It is not so valuable in the later stages because of the element of bacterial infection of the amebic lesions, against which quinine is inactive.

Benzoyl-acetyl peroxide, or acetozone, has been advocated lately in Manila in the treatment of amebic dysentery. It is used in solution of 1:1000. Strong considers it valuable, because it has just as decided an effect in killing the amebæ as quinine, and in addition it has a very marked bactericidal effect, and therefore also gives us a very desirable additional benefit in the

diminution of the intestinal bacteria. This is the newest remedy and merits careful investigation.

NOTES ON ANESTHESIA IN ABDOMINAL SURGERY.

In the course of an article with this title in the *Australasian Medical Gazette* of January 20, 1903, SAWKINS points out that many surgeons as a routine practice give their patients a hypodermic injection of morphine before operation. The author does not approve of this as a regular course. While in some nervous women, or in those worn out by loss of sleep or intense pain, a preliminary hypodermic of morphine may cause a euphoria, one has to remember the depressing effects of the drug on the respiratory center, its constipating action on the bowels, and its nauseating after-results. Its depressing effect on the respiration is not of so much moment when ether is to be the anesthetic, but when chloroform has to be given, it increases the already sufficient danger attending deep chloroform anesthesia in a debilitated subject. Its use so strangely modifies the pupil changes in etherization as to practically make them identical with those of chloroform anesthesia.

If morphine be used as an adjunct to anesthesia, it should be given in a not greater dose than one-sixth grain, and should be combined with atropine or strychnine, or both. The author prefers to have it administered at the close of an operation, with a view to inducing a prolonged sleep instead of the horrible nausea of anesthesia recovery. While doubtful of the advantages of morphine as an adjunct to anesthesia, the writer is confident as to the value of a preliminary course of strychnine, hypodermically or by the mouth, in all patients with lowered tone from whatsoever cause.

The administration of a saline under the skin is of great assistance to the anesthetist in cases where there has been considerable blood loss, or where the fluids of the body have been diminished from any cause; but where failing circulation is due to a heart atonic from disease, or poisoned by overdose, it is obviously useless to increase the fluids of the body. To do so is only to increase the work to be done by an already overtaxed organ. In such cases phlebotomy might be tried with advantage. Adrenalin is a drug which in suitable cases may be of great use in those emergencies which are apt to befall even the most careful administrators. The hypodermic injection of a small dose of adrenalin quickly raises the blood-pressure, and if the heart be sound will help to tide over a serious misadventure.

The conjunctival reflex is of little value in the majority of deeply-etherized patients. One might almost apply to it the epigram on the virtue of patience: "Found never in a woman, seldom in a man." The exceptional cases in which it persists are alcoholics and those possessing a full, hard pulse, as in chronic nephritis.

The pupil reflex is of great value in ether adminstration, when its variations at different stages and in different individuals are thoroughly appreciated. The pupil of simple ether anesthesia is usually moderately dilated and round; it shows no immediate reaction to light, but if it be kept exposed, without further administration, it gradually contracts with jerky movements generally synchronous with the inspirations. But in strong, muscular men, in those of either sex with hard pulses, alcoholics, and where morphine has been previously administered, the pupil approaches rather to the chloroform type. In the deep degree of etherization which the author advocates for abdominal work, the pupil gradually enlarges till it is widely dilated, immobile, and usually irregular in outline; in fact, just such a pupil as, if it occurred in chloroform administration, would unpleasantly suggest a coroner's inquest. But with this pupil in ether anesthesia there is a quiet, regular pulse and equally satisfactory respiratory action, and if the ether be withdrawn the pupils gradually contract to the moderately dilated, regularly outlined condition of ordinary anesthesia, the pulse and respiration continuing unaltered, or but slightly accelerated. If administration be now not recontinued, there will eventually come a deep, sighing inspiration, which, though mention of this has never been found in any text-book, the author considers the best indication we possess for the necessity of more anesthetic. If it be not given the pupils continue to con-

tract to the condition found in deep sleep, unless emesis occurs, when they become dilated. One of the causes of the larger pupils in the mere anesthesia of ether, as compared with that of chloroform, is the greater intra-ocular tension during anesthesia, due to the higher blood-pressure characteristic of ether administration than that of chloroform. Hence the sensitive pupilary curtain recedes before the increased tension in the anterior chamber.

A similar dilatation is temporarily caused by undue pressure over the cornea in ill-advised attempts to elicit a corneal reflex. The iris recedes before the compressing finger-tip, and resumes its original position on withdrawal. This may possibly mislead the administrator in etherization, while it is a positive source of danger in chloroform, simulating, as it does, the "safety" pupil reflex to light. The point is mentioned to emphasize the lack of necessity for vigorous manipulation of the ocular conjunctiva in attempts to obtain a lid reflex. Any but the gentlest touching of the conjunctiva is apt not only to damage the delicate epithelial abrasions, but in addition quickly renders it less sensitive, and so diminishes the use of the test. This can be demonstrated in any long-continued chloroform operation where one eye has been repeatedly used in endeavors to obtain a lid reflex. One has only to compare the result with that obtained in the hitherto unused eye to see how definitely the frequently fingered eye's sensibility has been tired out. Associated with this tired-out condition there is generally a comparative dilatation of the corresponding pupil.

THE IMPORTANCE OF DESTROYING THE TYPHOID BACILLUS IN THE URINE AND SPUTUM.

MARK RICHARDSON, who has done such excellent work in this field, contributes to the *Boston Medical and Surgical Journal* of February 5, 1903, the following important facts upon this intensely practical theme. He says as to the use of urotropin as a urinary disinfectant, that this drug has been used by eight observers in fifty-three cases. All the reports have been favorable except that of Gwynn, who found that in two cases of cystitis due to the typhoid bacillus the organisms persisted, though in much diminished numbers, in spite of a long-continued use of urotropin. Gwynn prefers irrigation of the bladder with corrosive sublimate 1 :50,000.

Very rarely the use of urotropin has been followed by painful micturition and hematuria. These symptoms have, however, ceased immediately upon omission of the drug, and no permanent injury to the kidneys has resulted.

Our present knowledge upon this subject may be summed up as follows:

1. Typhoid bacilli are present in the urines of about 21 per cent of individuals afflicted with typhoid fever.

2. The bacilli, when present, are generally in pure culture, and their number is frequently enormous—many millions in each cubic centimeter of urine.

3. The invasion of the urine by the bacilli takes place in the later stages of the disease. Unless measures are taken to remove the organisms they persist frequently for weeks, occasionally for months, and rarely for years, and thus constitute (*a*) a danger to the patient himself (cystitis and possibly orchitis and epididymitis), and (*b*) what is much more important, a grave source of danger to the public health.

4. The necessity for the rigid disinfection and supervision of typhoid urines is apparent.

5. In urotropin we have a drug which will, in the vast majority of cases, remove the typhoid organisms from the urine, not only in the cases of simple bacilluria, but also in those in which a cystitis has resulted. Very rarely an obstinate cystitis may require the use of vesical irrigations. Very infrequently a case will be seen in which the use of urotropin is followed by hematuria. In such cases the drug should he omitted and irrigations of the bladder substituted.

6. This subject in its relation to the public health is of the utmost importance. In the author's opinion it should be a fixed rule, and one rigorously enforced, that no typhoid convalescent be discharged as well until his urine has been proved permanently free from bacilli. In large hospitals, with their well equipped laboratories, such

supervision can be carried out with ease. Cases in private practice should be the care of the local boards of health. In this way we can prevent a considerable percentage of our typhoid convalescents from becoming unsuspected foci for the further distribution of the disease.

As to the presence of the typhoid bacillus in the sputum, the author was able, in 1897 (*Journal of the Boston Society of Medical Sciences,* Nov. 16, 1897), to isolate this organism on three successive days from the sputum of a case of typhoid fever complicated with pneumonia. In fifteen cases with no pulmonary complications the results were negative.

Since 1897 the subject has been investigated by a few observers only. Their results show that the typhoid bacillus may be present in the sputum during typhoid fever, especially if there be a coincident bronchitis or pneumonia. The typhoid bacilli are almost invariably associated with other organisms, such as the pneumococcus or the influenza bacillus, and are to be regarded rather as secondary invaders than as the primary cause of the complication. The sputum in these cases is generally hemorrhagic, and may contain large numbers of bacilli for considerable lengths of time. Seven weeks is the longest period of persistence recorded. The subject needs much further study, but enough is known to show that in the typhoid sputum we have still another excretion which must be carefully disinfected.

HYPODERMOCLYSIS.

In the *New York Medical Journal* of February 28, 1903, KEMP tells us that the indications for hypodermoclysis can be deduced from a statement of the effects produced by this procedure.

1. Hypodermoclysis increases the quantity of fluid in the vessels by replacing that which has been lost, as from hemorrhage or diarrhea; it adds fluid to the circulation, and thereby acts as a stimulant to a rapid and feeble heart, as in shock.

2. It dilutes the poison of disease and aids in the elimination of toxic products through the diuretic action on the kidneys, as in sepsis, or in uremia.

3. It causes profuse diuresis and relieves renal congestion, as in uremia, oliguria, or in acute congestion of the kidneys.

4. The saline injection is asserted by many to have a hemostatic effect, and is thus given in hemorrhage, as from gastric ulcer, intestinal ulcer, or in pulmonary hemorrhage. On the same principle, as heretofore noted, the author has seen small quantities of salt water given by mouth in the Adirondacks, in cases of pulmonary hemorrhage.

There is often a multiple effect secured by the hypodermoclysis. Thus, in cholera, it replaces the loss of fluid, stimulates from shock, and also acts as an eliminant of the poison. Hypodermoclysis would therefore be of value in the following conditions:

In diarrheas with excessive loss of fluid, as in dysentery, cholera morbus, cholera infantum, typhoid and allied diseases; pneumonia, septicemia, pyemia, peritonitis, pyelitis, septic endocarditis, puerperal sepsis, purpura hemorrhagica, severe burns, toxemia due to colon bacillus, tetanus, jaundice, plague, yellow fever, scarlatina, measles, typhus, diabetes, shock; hemorrhage from any cause; as an eliminant in diphtheria, following antitoxin injection; in toxemia of diphtheria, or from any cause; in any coma due to toxemia, in puerperal eclampsia—preceded by venesection; in oliguria, uremia, suppression of urine, renal congestion; in pulmonary edema, pleurisy with effusion, or ascites due to oliguria; in poisoning, as an eliminant, as from carbolic acid, alcohol, opium, carbonic acid gas, and especially in belladonna poisoning. In the last condition frequent catheterization should be employed.

The value of hpyodermoclysis, therefore, embraces a wide field.

There are two matters of further interest to which attention is called: First, Dr. S. J. Meltzer has suggested the value of hypodermoclysis with sodium salicylate as a diuretic, stating that, both experimentally and clinically, he has found it of service; secondly, it has been asserted in France that incipient tuberculosis can be diagnosticated by means of the reaction which occurs when a hypodermoclysis of normal saline solution is administered to patients so afflicted, the diagnosis being confirmed later. This reaction, however,

consisting in a rise of temperature, chilly feelings followed by sweating, with a subsequent fall of temperature and improvement in condition of the patient, often occurs when septic conditions exist. The author has also noted in a few cases this reaction—the rise of temperature, etc.—when the hypodermoclysis has been given at too low a temperature, and what is practically a cool solution is injected beneath the skin. It is not therefore of value from a diagnostic standpoint, nor need these results cause any alarm.

THE TOXEMIA OF PREGNANCY.

In the *Philadelphia Medical Journal* of February 28, 1903, WELLS in discussing the toxemia of pregnancy speaks of a class of remedies which are of the utmost importance, namely, those which increase elimination by the liver and intestines, and of these we may estimate calomel as by far the most important. He does not agree with those who say that it should always be given in small doses; his experience has taught him that better results are obtained when calomel is given in a fair dose, say of 5 to 10 grains, than when the amount is smaller. Sodium phosphate combined with calomel has proven of great use. The author is in the habit of beginning the use of calomel by giving five grains combined with a drachm of sodium phosphate divided into four or five powders or capsules, one being taken every hour, the last one at bedtime. Calomel should always be followed by one of the salines, and here magnesium sulphate is believed to be the best, although in patients in whom nausea is a marked symptom, calcined magnesia, or citrate of magnesia, will be more readily retained. Magnesium sulphate when used as a laxative for those patients should be given for some time. It is almost impossible to empty the bowels entirely by the administration of one or two doses of a laxative. The purging must be kept up for a time before any effect is produced. It has been shown that a large portion of the mucous membrane of the large intestine becomes coated with a sand-like fecal deposit, and this is exceedingly hard to remove. The contents of the intestinal lumen may be again and again evacuated without this deposit being materially reduced.

It seems possible that the peristaltic action of the intestines is reduced during pregnancy, and it is quite possible that, as the uterus increases in size, the intestines are more and more pressed upon and their movements lessened; this decreased peristaltic action being one of the most active causes of the deposit. Frequently doses of castor oil do good; when constipation is very obstinate, croton oil may be necessary. Such remedies as aloes may in some cases start up the uterine contractions, when this organ remains in an irritable condition. The compound cathartic pills of the Pharmacopœia have been recommended by some authors. Colocynth undoubtedly does good by producing free watery movements. Podophyllin is of some use in certain cases. It is not known that any of these last mentioned drugs have any advantage over the salines. Whatever laxative is used, it must be kept up for a number of days until the patient has from six to eight profuse watery stools within twenty-four hours. Irrigations of the bowels are of the greatest possible value; but it is useless or almost useless to give these with an ordinary rectal nozzle attached to a fountain syringe. When rectal irrigations are used the fluid should be injected through a regular rectal tube with the opening in the end and not on the side. A return flow rectal catheter will probably be a neater way of administering it.

The author has found again and again that high rectal irrigations have produced the greatest reduction of toxemic symptoms in those on the verge of eclampsia. Not only is the bowel flushed out by these irrigations, but a certain portion of the injected fluid is absorbed and the poison diluted thereby. As to the composition of the enema various substances may be used; as good as any is a sterilized normal salt solution. When the constipation is marked, magnesium sulphate or inspissated ox-gall, turpentine, or soap-suds may be used. The quantity should average not less than two quarts. It is probably best given through a fountain syringe held about three feet above the bed on which the patient lies. The fluid should be allowed to flow in slowly, and when the

distention becomes unbearable, the bowels may be emptied in a bedpan; or if a return catheter is used, the fluid will return through the second tube. These irrigations are followed by the greatest benefit when the bowels have been previously emptied by a laxative given by the mouth. It is important that the tube be passed up as far as it will go; as a rule it is well oiled or covered with soft soap, and is used with the patient lying on her left side; it gives but little inconvenience, and uterine contractions produced by its use have not been observed.

Two or three irrigations will be required each day for five or six days. When there is nausea, pyrosis, or hyperacidity, marked relief will often follow lavage of the stomach, using a 50-per-cent boracic acid solution or a solution of sodium bicarbonate, followed by the introduction of 5 or 10 grains of calomel.

The same method of lavage of the stomach is highly beneficial in the convulsions of eclampsia; as a means of cleansing the stomach, and probably diluting the poisons, it affords a convenient way of introducing calomel or other laxatives into the stomach. When nausea is a marked and constant symptom, it is best to depend entirely upon enemata to move the bowels, leaving the stomach free for nourishment.

THE USE OF CARBOLIC ACID IN THE TREATMENT OF SMALLPOX.

The London *Lancet* of February 21, 1903, contains a note on this subject by DUHR, in which he points out that various local applications have been used in the treatment of smallpox, and among them dilute carbolic acid, but he finds no record of the pure acid ever having been used for that purpose. The use of the acid when applied early in arresting the development of boils, and the excellent results the author has obtained in the past in the treatment of certain pustular eruptions of the skin, led him to think of trying it in this disease. This idea struck him at least two years ago, but he never had the opportunity of trying it till recently. The very limited experience he has had of it so far is so encouraging, and in one case he believes so remarkable, that he determined to make a few remarks on the matter, that others who have a much larger number of cases of this disease under their care may try this remedy if they think fit to do so. The method adopted was to apply carefully with a small camel-hair brush the pure acid to the rash over a certain area of the body each day, the face and head being the area selected for the first day.

The first case so treated was that of a girl, aged twelve years. It was the seventh day of the eruption—viz., January 24—and the vesicles were beginning to become pustular. The result was that the vesicles either dried up into crusts without becoming fully pustular, or, as happened in many cases, the contents of the vesicles became absorbed and the epidermis enclosing the vesicles scaled off. During this process the girl, who had been very ill, felt well, and her temperature was normal. The vesicles all scaled off within five days, leaving the usual marks but no pitting.

The second case was that of a male, aged fifty-four years, and the disease was confluent. In this case there was a diffuse red rash all over the body, and the face was swollen to such an extent that he was scarcely able to see. There was also delirium. It was impossible to apply the carbolic acid in consequence of the character of the rash until the vesicles appeared, which they did on January 28, when the application to them of the acid was commenced as before over the face and head. This treatment was assiduously persisted in till the rash over the whole body had been treated, with the result that pustulation was averted. The swelling of the face gradually subsided and the man improved daily, the temperature first falling to normal on the morning of February 2. In this case also after treatment the serum in the vesicles either exuded and dried up into scabs or became absorbed and the epidermis peeled off.

The same treatment has been applied to two other mild cases in different stages, and as far as one can judge from so limited an experience the application of carbolic acid will arrest the eruption either in the papular, vesicular, or pustular stage. The second case recorded above was se-

vere and confluent. The treatment cut short the disease, the second suppurative fever was averted, there will be no pitting, the offensiveness of the pustular stage was prevented, and the infectiousness of the patient was very materially diminished.

THE USE OF SALICYLIC ACID AS A PRESERVATIVE IN FOOD.

MACALISTER and BRADSHAW attempt in the London *Lancet* of March 14, 1903, to refute an error sanctioned by tradition and authority, feeling it to be their duty to place on record their conviction that the allegations which have been made against the employment of salicylic acid as a preservative in moderate quantities cannot be maintained, and to challenge the opponents of its use to bring forward a single instance in which it can be shown that bodily injury has resulted from its employment in such a manner. They deny that in the proportion in which they have met with it in articles submitted to them for examination it could be taken by any rational beings to such an extent as to do them any harm whatever. They further maintain that the use of this substance enables manufacturers to place on the market wholesome, agreeable, and inexpensive articles of food which form an acceptable and beneficial variety in the diet of persons who cannot afford more costly luxuries, and which, above all, supply the place of intoxicating drinks. This is the position which they maintain, and state it after mature consideration and with an adequate sense of responsibility.

HYOSCINE IN THE TREATMENT OF MORPHINISM; ITS OFFICE AND VALUE.

PETTEY states in the *Medical News* of February 28, 1903, that in his experience no remedy for any disease fills an indication more perfectly or gives better results than does hyoscine in the treatment of morphinism. The gradual reduction method of treating morphinism should be discarded as useless and even hurtful; the sudden withdrawal, without some agent to relieve the patient's suffering, is inhumane and dangerous. This leaves the rapid reduction as the only one of the old methods worthy of consideration, but in this the patient suffers so intensely and the result is so seldom a cure that it certainly cannot be regarded as a satisfactory or successful treatment. Any remedy or course of treatment that will rob the sudden withdrawal of morphine of its horrors of suffering and dangers to life should be regarded as a godsend to humanity. After the patient is prepared for it, the discreet administration of hyoscine accomplishes this result.

The painful symptoms attendant upon the abrupt withdrawal of morphine have a natural limit of a few days' duration. By the use of hyoscine these days may be passed in comfort, and the patient enabled to escape the nerve strain and shock that would necessarily have attended such an ordeal of suffering. Hyoscine not only occupies, but fills, when properly used, as important a place in the treatment of morphinism as does chloroform or ether in the practice of surgery. Its office is very similar to theirs. It saves the patient from indescribable suffering, and renders safe, practicable, and easy the unsafe, impracticable, and difficult.

HASHEESH AS A CAUSE OF INSANITY AND CRIME.

Editorially the London *Lancet* of March 14, 1903, says that Dr. John Warnock, medical director of the Egyptian Hospital for the Insane at Cairo, has recorded the results of his observations on "hasheesh," or cannabis indica, as an agency in the production of insanity and crime, drawn from an experience which is exceptionally large in this field of medicine. It is pointed out that Ibn Beitar, an Arabian physician, was the first to recognize an insanity from the use of hasheesh, A. D. 1235, but the drug had then been in use probably for many centuries. At present the drug is largely consumed in Egypt, adds Dr. Warnock, although its importation is prohibited by law.

The fact that about sixteen tons of hasheesh was confiscated in Egypt during the year 1901 will give some indication of the extent of its use. "Most of the drug is consumed by smoking in the gozeh (an Egyptian pipe) and in cigarettes, but a considerable amount is eaten

in pill form and in sweetmeats, magoon, etc." The usual reason given by patients for using hasheesh is that it induces a general feeling of pleasure and content. When eaten in pills and sweetmeats, it seems to be taken chiefly as an aphrodisiac. Insanity from hasheesh belongs to the "toxic" group, which includes insanities due to alcohol, opium, and cocaine.

Dr. Warnock classifies the insanities from hasheesh under the following types: First there is the temporary intoxication from hasheesh which is attended with pleasurable exhilaration. Pleasant, half-waking dreams, not unlike those of the opium-eater, occupy the mind, but active excitement, as in alcoholic intoxication, is uncommon. Secondly there is a delirium from hasheesh, which is associated with hallucinations of sight, hearing, taste, and smell. Great exaltation, restlessness, and sleeplessness are marked features, but there is an absence of the tremors and physical exhaustion of alcoholic delirium tremens. The third variety is a more acute form of excitement, attended with hallucinations, incoherence, destructiveness, indecency, and impulses toward violence. Delusions of poisoning or of persecution are common in this affection. States of depression and terror may be intermingled with excitement. These cases tend to pass into a chronic condition, which constitutes the fourth class. Eventually there succeeds a condition of permanent dementia with loss of memory, apathy, and degraded (wet and dirty) habits, a state of terminal dementia which ends in death. A fifth class includes "degenerates" in whom there arise periodically strong cravings for hasheesh. Persons of this class, adds Dr. Warnock, are "good-for-nothing, lazy fellows, who live by begging and stealing; . . . the moral degradation of these cases is their most salient symptom. . . . While in the asylum they are notorious for making false charges, refusing to work, and quarrelling. Irritability, unconcern as to the future, malingering, and fervent promises of reform are all marks of this state."

The craving for the drug in this affection is not so great as in dipsomania or morphinomania. In the earlier stages such persons usually commit crimes and find themselves in jail. Later, when intellectual impairment becomes more marked, they are sent to an asylum. The similarity between this condition and that of dipsomania, adds Dr. Warnock, is evident, while many of the differences are probably due to racial peculiarities. Suicidal attempts in insanity due to hasheesh are rare. The drug however appears, concludes Dr. Warnock, to play a more important part in the production of insanity in Egypt than alcoholism in England, while as a cause of crime it appears to be as important in Egypt as alcoholic excess is in England.

THE VALUE OF SALICYLATE OF SODIUM IN LARGE DOSES IN INFLAMMATORY EYE DISEASES.

Our readers will recall that we have published in the GAZETTE the opinions of Gifford on this subject. To the *Ophthalmic Record* for February, 1903, GRADLE sends a paper in which he states that the valuable report by Dr. Gifford has induced him to publish his experience with the same drug in these affections. It agrees, on the whole, with that of Gifford, but like him he has reason to believe that the value of the agent is not as much appreciated as it deserves. While nearly all text-books recommend salicylates in episcleritis, iritis, and a few other inflammations, there is as a rule no definite statement what and how much the less experienced observer can expect from its use. Reference, however, should be made to very definite reports by Chisholm in 1880 and Friedenwald in 1895, both of whom claim more for its abortive influence in iritis than the author has been able to confirm.

In dealing with diseases the course of which is subject to more or less fluctuation, and the duration of which is not quite constant, an influence can be claimed for a special agent only if the latter changes with tolerable regularity the clinical course within a short time compared with the ordinary length of the disease. When the drug must be given for a long time its influence is also strikingly shown if interruption in its use coincides with protraction, whereas its renewed administration again leads to improvement. All this

applies to salicylate of sodium properly given. But unfortunately there are occasional unaccountable exceptions to its control of the diseases which it usually influences. On the other hand the author has observed a few instances (a case of keratitis, and various cases of persistent cyclitis and sympathetic disease) which, as judged by their past history, would probably never have ended in recovery without salicylates.

Like Gifford he emphasizes the necessity for large doses. Small quantities do not act proportionately less, but are simply inert. An adult requires 20 grains at least four to five times a day, while if 25 grains can be tolerated five to six times more decisive influence is quickly obtained. When such large doses produce no effect upon the disease within forty-eight to sixty hours, the author has found it useless to continue the drug. By using tablets (5 grains), coated if desired, the stomach is almost never irritated. The limit to its increasing or continued use is generally set by tinnitus or a feeling of confusion. He continues it in sensitive subjects intermittently, omitting the morning doses and increasing in the afternoon. He once observed a mild delirium produced by 12-grain doses in an eight-year-old child. In rare instances annoying, but not dangerous, prostration prevents its continuance. In urgent instances the patient may have to submit to these various disturbances in order to get the benefit of the agent.

THE GELATIN TREATMENT OF HEMOPTYSIS.

We have again and again printed in these columns the facts in regard to gelatin as a hemostatic, and we now note with interest the report on this matter made by TICKELL in the *Lancet* of February 28, 1903. First, the author considers the treatment of hemoptysis by hypodermic injections of the gelatin solution. This method has been used in France and Germany with brilliant results as regards the checking of hemorrhage, but unfortunately it is associated with a series of unpleasant effects which at times are of such a nature as seriously to call in question the utility of the proceeding. In the first place the injection is accompanied with severe pain, which is due not so much to the puncture of the skin as to the distention of the tissues by the solution. Even if a local anesthetic be employed the pains usually supervene shortly after the operation and may persist for two or three hours, and when the operation has to be repeated several times on successive days the painfulness of the procedure becomes a matter of serious consideration. Again, not infrequently necrosis of the skin occurs as a consequence of the injection, so that the patient has to remain a long time in bed—a most unfortunate circumstance from the point of view of open-air treatment. In some cases tetanus has been observed to ensue. Levy and Bruns examined six samples of gelatin, and found tetanus spores in four of them. It is therefore necessary to sterilize the gelatin before use. The question as to whether prolonged boiling destroys the value of gelatin as a hemostatic may, according to experience in Dr. Hettinger's sanatorium, be answered in the negative.

The most disagreeable effect of the hypodermic injection of gelatin undoubtedly consists in the raising of the body temperature. As reported from Brehmer's Institute in Görbersdorf, one patient treated with the gelatin injections on five successive evenings had a temperature of from 40.3° to 40.7° C. (104.5° to 105.2° F.). The subsidence of the fever is irregular, but it may persist for ten or fourteen days, and thus increase the debilitation of the patient.

All these observations show that the treatment of hemoptysis by the hypodermic injection of gelatin involves constant and careful watching of the patient, such as can be satisfactorily carried out only in hospitals or similar institutions. For the general practitioner it could be of no use.

This form of treatment has been applied with success in other varieties of hemorrhage. For instance, Holtschmidt employed injections of a two-per-cent solution of gelatin in normal saline solution; 15 cubic centimeters were injected, usually in two places to avoid tension. The hemorrhage was checked, and five patients recovered. Of the previous four-

teen cases in the same clinic which were not treated by gelatin, seven were fatal.

On account of its many unpleasant complications the above treatment has not been used in Dr. Hettinger's sanatorium for a long time, the older methods being employed previously to the occurrence of the following case.

The patient was admitted on March 3, 1902, having twice within the previous week brought up large quantities of blood. Hemoptysis occurred again on the day of admission. On the next day bleeding occurred once more, and the patient lost on each occasion about a quarter of a liter (nearly nine ounces). On the 6th there was another hemoptysis. From this date until the 13th a more or less copious loss of blood occurred nearly every day. Now that a fatal termination appeared imminent it was decided to employ gelatin, but in consequence of the strong objections to the hypodermic method the solution was given per rectum. On the 14th there was no hemoptysis. The sputum was colored. The rectal injection was repeated. During the next three days only traces of blood were seen in the sputum. The gelatin treatment was continued until the 17th, when the sputum was free from color. From this time forward the patient had no return of hemoptysis.

Encouraged by this success the treatment was applied in the same manner to four other patients during the months of April and May, and was always attended by the same favorable result. In one case in which the hemoptysis was of comparatively slight degree, two injections a day were sufficient to free the sputum from any trace of blood, but it was the rule to give three injections per diem. In all the other cases the sputum was clear of blood within four or five days of the first injection. Since May 15 more cases have been treated at the sanatorium in a like manner, and in each with unqualified success. Slight cases in which a small quantity of blood was brought up on only one occasion did not receive this treatment. Others who have tried this method report equally good results.

In contradistinction to the hypodermic injection the method here described is quite painless. Further, every danger of infection is avoided. Also no raising of the temperature is produced, and, of course, there is no necrosis. In short, the rectal injection of gelatin solution is unattended by any disturbing complication, and it has the same effect in stopping hemorrhage as has the subcutaneous injection. A strong point in favor of this method is that it can easily be carried out in general practice. The gelatin can be obtained from a druggist or from a restaurant, and the only apparatus necessary is a jug holding about two and a half pints and an india rubber tube with a blunt nozzle. The nozzle can be held in the rectum by the patient himself, while the nurse holds the vessel containing the solution at a height of about two or three feet, so that the solution flows into the rectum at a very moderate pressure. When the hemorrhage has been completely stopped the patient must be kept quiet in bed for several days on a light diet. It may here be mentioned that the injection does not cause any action of the bowels.

The solution is prepared in the following manner: 50 grammes (about one and three-quarter ounces) of gelatin is dissolved in one and a quarter liters (two pints three and three-quarter ounces) of boiling water and boiled very gently for one hour, when the volume is reduced by evaporation to one liter. The solution is then cooled down to the body temperature, and a quarter of a liter (nearly nine ounces) is slowly passed into the rectum from an ordinary irrigator in the manner described above. The injection is given three times a day until the sputum ceases to show any trace of blood.

RELATION OF ANESTHETICS TO SHOCK.

To the *Medical Press* of February 25, 1903, BLUMFELD contributes his views as to this very important question.

His object is to raise a discussion upon the question of the part which anesthetics play in the prevention of shock; and he is aware that exactly opposite opinions are held on this point, some observers believing that the shock present after certain operations is entirely due to the anesthetic, and others that it is due entirely to the operative procedures, and would be much

worse without the anesthetic. Dr. Blumfeld also refers to the difference of opinion with regard to shock and the depth of anesthesia, some anesthetists holding that shock is more commonly met with in light than in deep anesthesia, and others exactly contrary views. To avoid confusion, Dr. Blumfeld states that in speaking of shock he also includes collapse, for both are conditions of prostration in which failure of the circulation plays a prominent part. He reminds us that death from the shock of operation is much less frequent than it was in the old days, partly because anesthetics have abolished pain, which is an important factor in the causation of shock, and partly by protecting the central nervous system from receiving impressions of the serious damage being done to the tissues by the operation.

Besides the well-known "bleeding," so to speak, of the patient into his splanchnic area during shock, there is also the general reflex paralysis affecting, besides all the other functions of the body, especially the normal interchange between the blood and tissues, which is characterized occasionally by patients suffering from shock not corresponding to such stimuli as strychnine and alcohol at the time of exhibition of these remedies, but subsequently manifesting symptoms of overdose. It is because shock is a reflex affair that anesthetics can be looked to with confidence to influence it, since they have such a powerful influence on all the other reflexes; but their relation to shock differs from their relation to the other reflexes, in that whereas they can only abolish the latter, they can both abolish and also produce shock, or a condition exactly resembling it.

Dr. Blumfeld is strongly of opinion that since both shock and deep chloroformization are characterized by a marked fall in blood-pressure, a deep degree of anesthesia should, as far as possible, be avoided in operations upon patients already suffering from shock, or likely to suffer from it as a result of the operation. He does not wish to be understood as including ether in these remarks, since there is no evidence to show that ether produces shock in the same way as chloroform, although it often gives rise to collapse after a prolonged administration of large doses in the kind of case referred to. The difficulty in assigning its proper place to the producer of collapse—to the operation on the one hand, and to the anesthetic on the other—is great, and is usually not duly appreciated by the surgeon, who is apt to forget the immense importance of economizing the time during which parts of the body, such as the bowels, for instance, are being subjected to manipulation. The longer such procedures last the more easily is shock induced. The purely nervous element has also to be taken into consideration, and adds greatly to the difficulty of determining the cause of shock. Dr. Blumfeld quotes undoubted cases of shock from nervous influences.

Because anesthetics have the power of producing shock, Dr. Blumfeld does not think it right to assume that in cases already suffering from shock general anesthetics are to be avoided, but that there should be a proper appreciation of the difference between light and deep anesthesia, and that a general anesthetic should always be given, but only to a light degree, and that any attempt to keep such cases deeply under chloroform is highly dangerous. In a recent letter to the *Lancet* of January 17, page 199, on the surgical treatment of perforated typhoid ulcer, Mr. H. J. Curtiss raises the question of anesthetics, and advocates the use of local anesthesia, assuming an extra danger from general anesthesia in these cases. Dr. Blumfeld believes the Society of Anesthetists is not prepared to admit this assumption, but that they are in a position to say with regard to such cases that if an operation must be performed there is less danger in performing it if a general anesthetic is properly given than there is in performing it without one.

THE TREATMENT OF GLYCOSURIA AND DIABETES.

HALE WHITE in the *Lancet* of March 14, 1903, after debating the general problem of diabetes and glycosuria passes on to the subject of treatment of these states and refers to the advantages of withholding carbohydrates from the food, for by so doing the patient gains strength and

weight; and the excretion of sugar and oxybutyric acid diminishes at any rate in most cases. Sometimes an intense ferric chloride reaction has been obtained by the author even after weeks of strict diet, and even when the sugar has disappeared from the urine. It often seems that in many cases dieting has been too strict, and as a rule there is at any rate no harm in milk. In any case the author suggests that when diet will not completely control the glycosuria the patient should be allowed just so much carbohydrate as will not increase the sugar in the urine, and when diet will control it he should be allowed carbohydrate food up to just below the point at which it leads to glycosuria. Levulose is certainly the best carbohydrate; it may be given up to any quantity so long as it does not cause or increase the glycosuria. Inulin, which is the starch corresponding to levulose, may also be given; it occurs in dahlia tubers, and these may be cooked and eaten like potatoes. There is a pernicious belief among some patients that toast may be taken instead of bread. It need hardly be said that this is not so. Although there are many reasons against alcohol, yet in a severe case advantage may be taken of its energy-yielding power provided it is unsweetened. Many cases are probably not allowed enough fat.

We should all be agreed that too sudden a deprivation of carbohydrates may lead to coma, but why this is we do not know, nor do we understand the undoubted and very important fact that coma is often brought on by exertion, worry, or mental anxiety. Unfortunately, we are much in the dark as to the treatment of coma. As is shown by cases recorded by Fagge, the injection of normal saline solution will sometimes bring the patient out of coma, but he relapses again in a few minutes. Better still is the use of large quantities of alkali. If a patient feels a little drowsy it is a good thing to order 100 grains of bicarbonate of sodium or 50 of the carbonate dissolved in a pint of milk, and for him to drink three or four such pints in the twenty-four hours. If the coma is deeper a solution of sodium bicarbonate may be injected subcutaneously, so that at least 200 grains is given at the first injection. It has been given per rectum, but that is much less certain. If the case is at all severe, with an abundant ferric chloride reaction, but no coma, it is the author's custom to order some 50 to 100 grains of bicarbonate of sodium to be dissolved in milk and taken during the day. From cases he has watched he is certain that this treatment is useful, and thinks that it sometimes tides over a time till the good effect of dietetic treatment is felt. It often fails to save life, but then we must remember that it does not stop the formation of the poison. It is evidence in support of this view that diabetics often appear to derive much benefit from alkaline waters. The bowels of these patients should be kept well open, for by that means we may eliminate some of the poison; possibly the abdominal pain and vomiting which so often herald coma should be interpreted as an attempt to rid the body of the poison by way of the gastrointestinal tract.

There appears to be no doubt that both morphine and codeine can diminish the excretion of sugar; it will be of interest to hear why they are used less than they were. Aspirin is said to act beneficially in some cases, and it is hoped we may have some evidence for or against it. Dr. A. E. Garrod reported the case of a child, aged seven years, who on fixed diet was excreting 30 grammes of sugar a day; she was put on 15 grains of aspirin a day, and the excretion of sugar fell, varying from six to ten grammes. After a week the aspirin stopped, and the excretion of sugar fell to two or three grammes a day. It must be remembered that aspirin, being a salicylate, will itself give a ferric chloride reaction. The author has tried feeding diabetics on pancreas, and has injected liquor pancreaticus subcutaneously, but without success, nor does the use of Professor Starling's secretin appear to be beneficial.

The treatment of the many associated conditions is beyond the scope of these remarks, although the question is raised as to whether the number of cases of diabetic phthisis has not diminished of late years. It is believed it will be found that it has.

MERCURY IN SYPHILIS.

FULLER, of New York, in the *Journal of the American Medical Association* of March 7, 1903, states that as the administration of mercury hypodermically is of somewhat recent origin, and as its therapeutic use in this manner is still restricted to the practice of comparatively few surgeons, it may be well to devote some special remarks to the technique of this form of treatment. In the first place, mercury so used can be administered as an aqueous solution of a salt or as an insoluble salt suspended in an oily medium. The medication should not be injected subcutaneously, but intramuscularly and deeply in connection with thick, fleshy structures. The gluteal region represents the part best suited for these injections, care being taken not to involve an area so low that the sitting posture subjects it to direct pressure. If a soluble salt of mercury is to be employed the corrosive chloride is to be preferred dissolved in a normal aqueous salt solution, each 10 to 15 m. of the solution containing one-fourth grain of the mercurial salt. The presence of the corrosive sublimate insures the sterility of the solution. As much as one-fourth grain of the corrosive sublimate can be injected daily, or one-half grain every two or three days. In commencing treatment, however, it is not well to make the initial doses as large as these until the tolerance of the individual to the drug is established.

Calomel suspended in sterilized oil is the form in which the insoluble salt was injected in the early experimental days of the treatment. Although the systemic mercurial effects from such injections were marked, still they were very unsatisfactory, owing to the painful local after-effects produced, many patients being rendered so sore in the gluteal region as to be in a large degree crippled for a week or so, while in a few instances actual abscess formation resulted. These disagreeable effects resulted chiefly from two causes: the difficulty in keeping a vegetable oil in a sterile condition, and, to a less degree, to the natural irritating quality of the calomel. The substitution of liquid petroleum products in the place of olive oil worked a great change for the better in this method of treatment. Liquid vaselin, albolene, and benzoinol are some of the names given to these petroleum derivatives. At the present time calomel is by many still employed suspended in one of these latter preparations, and the results reported from it when so used are satisfactory. Another mercurial salt, insoluble in oil, which has to a considerable degree supplanted calomel, in this connection, is the salicylate of mercury. The salicylate is a powder which closely resembles the mild chloride in gross appearance. The therapeutic strength of the two when employed in this manner is also identical. The salicylate is supposed to be the less irritating. As the result of much personal experience, the author has adopted it as the form of mercury which he generally employs when using the drug hypodermically.

The ordinary full dose of the insoluble salt so injected is 1½ grains. This amount can be given in 20 minims of the oil. Twenty-four grains of the salt in one ounce of the oil would make a mixture every 30 minims of which, when well shaken, would contain 1½ grains of the salt. The syringe to be used should be one of drachm capacity, with a needle about 1¼ inches in length and of the bore and thickness of a small-sized aspirating needle. The caliber of an ordinary hypodermic needle is too fine to transmit oil. Syringes which are made partially of glass or all of glass, with the exception of asbestos packing to the piston, are to be preferred. The oily mixture should be warm, about the temperature of the body, when injected. Antiseptic precautions should, of course, be observed, and the syringe and the solution should be sterile. The patient should stand erect with the buttocks exposed. After the mixture has been thoroughly shaken the syringe should be quickly filled, the needle attached, and the injection given. Everything in this connection should be done speedily except the actual injection, which last should be gradual, a minute or so being taken to slowly inject the dose. The patient should be instructed to relax his muscle while receiving the injection. If 30 minims is to be injected, care should be taken to load the syringe to the extent of 40 to 45 minims, and while the injection is being

given the outer end of the syringe should be tilted slightly upward. The reason for this lies in the fact that in a freshly shaken oily mixture there must, of course, be an admixture of some air bubbles. If the directions here laid down are followed all these air bubbles will collect during the process of injecting in the upper further portion of the piston, and be contained in the last 10 or 15 minims, which is not injected. If at any time during the process of injecting much resistance is met to a further depression of the piston, or if the caliber of the needle becomes plugged by a packing therein of the mercurial salt, the needle should be immediately withdrawn and the remainder of the injection given in another place.

If an individual presents himself during the primary stage of syphilis, and keeps under observation so that mercurial treatment can be inaugurated as soon as a definite diagnosis can be made, then in most instances the administration of the drug by the mouth is the form of medication to be first tried. If the drug so administered is satisfactorily tolerated and succeeds in not only dissipating the symptoms which may be present, but also in preventing the development of new ones, then there is no good reason for displacing the method first adopted in favor of another. Not infrequently in such an instance, however, mercury by mouth, although well tolerated, may not, especially during the first few months of its administration, be potent enough to entirely hold the disease in abeyance. In such cases a hypodermic injection given from time to time will satisfactorily supplement the effect of the mercury taken by mouth. If a person presents himself for the first time late in the secondary stage of the disease, where owing to anemia, facial or other prominent eruptive manifestations, alopecia, cephalalgia, rheumatoid pains, mucous patches, or like developments, it may be of the greatest importance to quickly quell symptoms, not only for the good of the individual, but also to prevent the fact that syphilis has been contracted from becoming generally known, then hypodermic medication is to be recommended owing to the quickness of the ensuing results, a marked fading in connection with an eruptive lesion and decided cessation in connection with pain being noted even after the first injection. In a case such as this, after the disease is well under control, then it may be that another form of medication can be substituted.

DIPHTHERIA ANTITOXIN IN LONDON.

The *British Medical Journal* of March 14, 1903, has this to say editorially upon diphtheria antitoxin: "The value of antitoxin treatment in diphtheria is clearly demonstrated in the returns of the Metropolitan Asylums Board. In 1894, 3042 patients of all ages were treated in the board's hospitals without antitoxin; 902 died, yielding a mortality of 29.6 per cent. In 1895 the antitoxic serum treatment was inaugurated; 3529 cases of diphtheria were treated, and 729 died, yielding a mortality of 22.5 per cent. Hence, in the first year there was a fall in mortality of 7.1 per cent. From the Annual Report of the Metropolitan Asylums Board for 1901, recently issued, it appears that in 1901, 6499 patients suffering from diphtheria were treated with antitoxin in the board's hospitals; 817 died, yielding a mortality of 12.5 per cent. There has, therefore, been a fall in mortality percentage from 29.6 in 1894, without antitoxin, to 12.5 in 1901, with antitoxin. In other respects the treatment has been substantially the same. The laryngeal cases treated in 1901 with antitoxin numbered 753, and there were 159 deaths, which gives a mortality percentage of 21.1. It has long been known that early administration of antitoxin is important if its real advantages are to be gained. But it would be difficult to furnish more concise or convincing evidence of this well known fact than the tables printed in the Asylums Board Report from Dr. MacCombie's results at the Brook Hospital. During the year 723 cases of diphtheria were treated with antitoxin, and 78 died, yielding a mortality per cent of 10.79. The antitoxin treatment was applied in each of these cases, but in some it was possible to begin on the first day of the disease, in others on the second, and so on. The paramount importance of administration at the earliest possible moment is seen in the re-

sult. The mortality percentage of the first-day cases (38) was 0.0; of the second-day (170 cases) 4.1; of the third day (192 cases) 11.9; of the fourth day (137 cases) 12.4; and of the fifth and subsequent days (186 cases) 16.6. For five consecutive years there has not been a death at this hospital among the cases that came under treatment on the first day of the disease, and of those coming under treatment on the second day of the disease the mortality has not exceeded 5.4 per cent. These figures afford striking evidence of the value of antitoxin, and particularly of its early administration."

BOSSI'S DILATOR IN ECLAMPSIA.

BALLANTYNE, of Edinburgh, contributes to the *British Medical Journal* of February 21, 1903, his views in regard to the use of this instrument in the treatment of eclampsia. As he well says, the management of cases of eclampsia in labor is still so unsatisfactory that obstetricians are glad to welcome and test any new plan of treatment which may seem to promise success. The rapid dilatation of the cervix uteri with Bossi's four-bladed dilator and the early termination of the labor by forceps, or naturally, is perhaps the newest method of management which has been placed before the profession. The author has dealt with three cases of albuminuria in pregnancy, two of which went on to eclampsia, by this method, and he places the results on record in the hope that others who have experience in this direction may be induced to do so also.

His first case was that of a primipara, aged twenty-three, who was admitted to the Edinburgh Royal Maternity Hospital on the evening of November 13, 1902. She had had three convulsions before coming in, there had been marked vertex headache for two days previously, and the os uteri was about one inch in diameter. The position was R. O. P., and the anterior fontanel was felt presenting. She had a bad convulsion just after being brought into the hospital. The pelvis was somewhat narrow, and there was a large amount of albumin in the urine (24 grammes per liter). He inserted the Bossi dilator at 10 P.M., and obtained full dilatation of the os in twenty minutes. He then applied forceps, but could not get rotation of the head. There was evidence that the child was dead, so he performed basilysis and rapidly extracted. The child weighed 7 pounds without the brain and cranial vault bones. The mother made a slow but complete recovery. There was no laceration of the cervix. The diagonal conjugate was just over four inches.

His second patient was a 4-para, thirty-two years of age, who was admitted to the Maternity Hospital on January 3, 1903, having been forty hours in strong labor in the first stage. She was given three successive hypodermic injections of morphine in the hope of suspending the uterine action and allowing the patient to get some sleep and rest, but after 1¼ grains had thus been given without any result, and as it was now discovered that there was albuminuria, he decided to dilate the cervix with the Bossi dilator. She had by this time been fifty hours in strong labor, and the os, which was about two inches in diameter, had been of the same size for many hours. The presentation was the vertex, the position R. O. P. In half an hour, with the help of the Bossi dilator, he completed the dilatation of the cervix, put on forceps, and delivered a living male infant weighing 7 pounds 7 ounces. Both the mother and child made good recoveries.

He saw his third case in consultation on February 10. The physician had not been engaged to attend this patient, a 1-para of about twenty-four years of age, but had been suddenly sent for as convulsions had supervened. She was six and a half months advanced in pregnancy, and had had five fits in rapid succession before he saw her. There was much albumin in the urine, and the cervix was very rigid, the os being barely an inch in diameter. He dilated with the Bossi dilator in thirty-five minutes to a little over three inches in diameter. As it was a premature labor he did not try to obtain full dilatation. In about half an hour afterward the fetus was delivered with forceps; it was not viable. The mother made an uninterrupted recovery.

In none of these three cases had he any opportunity of dealing with the condition

by prophylaxis, all the patients were in labor when he was summoned; in all of them morphine was given, but only to a small extent in the first and third (¼ grain), and in one of them (the first) the saline infusion was injected below both breasts.

The writer has dealt with many cases of eclampsia since he published his first case in 1884, and believes that if we accept the principle of early completion of labor as the treatment of the condition, then the Bossi dilator enables us to do this more quickly than any other means; further, it would seem to do so with safety if properly used.

THE TREATMENT OF THE AUTOINTOXICATIONS OF PREGNANCY BY THYROID EXTRACT; THE ANTICIPATION OF IMPENDING ECLAMPSIA.

In the *Scottish Medical and Surgical Journal* for March, 1903, NICHOLSON after discussing the influence of the thyroid gland upon metabolism in pregnant women reaches the conclusion that when a pregnant woman threatens to become eclamptic, certain principles of treatment are clearly indicated, and no single drug so fully fulfils all these indications as thyroid extract. A substance which so powerfully stimulates both metabolism and elimination, increases largely the secretion of urine and the excretion of urea and other urinary bodies, acts as a specific vasodilator, thus leading to perspiration and lowering of the blood-pressure, cannot fail to prove a potent means of safeguarding the pregnant woman from the effects of toxic poisoning.

In testing the efficacy of any remedy it is necessary to be sure of two things: (1) the therapeutic activity of the preparation employed must be assured; and (2) the drug must in all cases be given in doses sufficiently large to produce physiological effects. With regard to thyroid extract, it is not thought that a reliable preparation of uniform activity is at present obtainable. It is also difficult to decide whether dry thyroid extract—which contains the whole of the active constituents of the gland—is to be preferred before any of its derivatives, such as iodothyrin, thyroglandin, thyrocol, etc., all of which bear the specific qualities of the gland. In myxedema, iodothyrin is quite sufficient as a substitute for the normal thyroid secretion, though it is not certain that this principle represents the whole activity of the gland. Thus if one could obtain a uniformly reliable extract of the healthy thyroid of the sheep, it might be chosen, for the thyroid gland may have other functions than its secretion.

Again, with regard to dosage, thyroid extract—even when a preparation of undoubted activity is being used—seems to be sometimes almost devoid of effect, unless very large quantities are given. As the remedy is commonly regarded as a dangerous one, adequate doses are not always used; hence the results are disappointing. The uncertainty of the drug itself, and the very variable quantity required, under different circumstances, to produce symptoms of poisoning (thyroidism) seem to be factors of great importance in the question of thyroid medication.

In regard to their reaction to thyroid extract, women who suffer from pre-eclamptic symptoms during pregnancy sometimes readily exhibit symptoms of thyroidism, and in this respect they resemble myxedematous persons. Normal individuals are seldom so susceptible to the effects of the drug.

The action of a reliable thyroid preparation, when given in adequate doses, is a very precise one, and definite symptoms are always produced. Acceleration of the pulse is a constant and early effect, and coincidently there is increased warmth of the skin (vasodilatation), perspiration, diuresis, and often a rise of temperature. If such symptoms do not appear, one must conclude either that the drug is inert, or that it has not been given in sufficient doses.

In the intoxication of pregnancy, whether evidenced by albuminuria, or only by other symptoms, thyroid extract must be pushed till it produces its full effects upon the circulation. Otherwise there will only be partial, if any, improvement in the symptoms, and a useful means of treatment may be discontinued just when it is beginning to do good.

ACUTE YELLOW ATROPHY OF THE LIVER AS A SEQUELA TO APPENDECTOMY.

BALLIN (*Annals of Surgery*, March, 1903) reports one case of acute yellow atrophy of the liver following appendectomy, and discusses nine other cases following various operations which he has collected from the literature.

Acute yellow atrophy of the liver is a rare disease; according to Osler about 250 cases are on record. This affection is also called icterus gravis, fatal icterus, pernicious jaundice, acute diffuse hepatitis, hepatic insufficiency, etc. Acute yellow atrophy of the liver is characterized by a more or less sudden onset of icterus, increasing to the severest form, headaches, insomnia, violent delirium, spasms, and coma. There are often cutaneous and mucous hemorrhages. The temperature is usually high and irregular. The pulse is first normal, later rapid; urine contains bile pigments, albumin, casts, and products of incomplete metabolism of albumin, leucin, and tyrosin, the presence of which is considered pathognomonic. The affection mostly ends fatally, but there are recoveries on record. The findings of the post-mortem are: Liver reduced in size; cut surface mottled yellow, sometimes with red spots (red atrophy), the parenchyma softened and friable; microscopically the liver shows biliary infiltration, cells in all stages of degeneration. Further we find parenchymatous nephritis, large spleen, degeneration of muscles, hemorrhages in mucous and serous membranes.

The etiology of this affection is not quite clear. The same changes are found in phosphorus poisoning; many believe it to be of toxic origin, but others consider it to be of an infectious nature; pyogenic germs have been found in the affected organs. The disease seems to occur always secondary to some other ailment, and is observed mostly during pregnancy (about one-third of all cases, hence the predominance in women), after typhoid fever, recurring typhoid, sepsis, syphilis, gonorrhea (Aufrecht), sclerema neonatorum, and severe nervous shock (Albu); further in phosphorus, antimony, and arsenic poisoning. As a sequel to operation, only nine cases of acute yellow atrophy of the liver are reported, therefore the following case seems worthy of record:

A brass worker, aged twenty years, was operated upon for an acute appendicitis. The appendix, cæcum, and omentum were inflamed and swollen. The first three days after the operation everything looked favorable except a slight icterus. In the fourth night serious delirium developed, very violent spasms set in, only to be interrupted by a deep comatose condition. At the same time deep icterus existed; hemorrhagic masses were vomited; bile, albumin, casts, leucin, and tyrosin appeared in the urine; the liver dulness was much diminished. This serious condition lasted five days, to yield finally to a slow improvement.

There can be no doubt that this was a case of acute yellow atrophy of the liver after an appendectomy under chloroform. All the typical symptoms were present: icterus, delirium, spasms, coma, fever, leucin, and tyrosin in the urine. Even the small liver dulness could be percussed. After the seventh day the symptoms gradually subsided and the patient recovered. Recoveries after acute yellow atrophy of the liver are so exceptional that Sajous (*Annual Cyclopedia*, 1899, vol. v, p. 395) says: "The disease is so fatal that recovery almost implies a mistake in diagnosis." But, as previously mentioned, there certainly are some recoveries of undoubted cases of this sickness reported. Weising could gather sixteen cases of favorable termination. Some more recoveries have been recorded (Albu, Dobie, Laigne-Lavastine). Senator believes in the possibility of recovery; so do Bouchard and others. Nevertheless, the mortality seems to be about ninety-five per cent.

As already mentioned, very few similar cases after operation are on record. The author could find only nine, none of them in this country. All ten cases have in common that one or two days after an operation a slight icterus developed, followed by vomiting of sometimes bloody character, serious delirium, coma, and in nine out of ten cases death. Four of the patients were male, three female—in three

the sex is not mentioned. The ages varied between twenty and forty-two years. In seven cases chloroform was used as an anesthetic, once Billroth's chloroform mixture; in two cases the anesthetic is not named. As predisposing causes alcoholism is given in three cases; indigestion twice; once with slight catarrhal icterus; lead once. In one case the affection followed herniotomy with resection of adherent omentum; in three cases uterine or adnexa operations; one removal of an ovarian cyst with torsion and necrosis of the pedicle; one a hysterectomy with morcellement of uterine fibroids, and one removal of the adnexa for chronic salpingitis; twice an appendectomy, both cases with inflammation and suppuration; and once, the only operation not abdominal, a very difficult teeth extraction from suppurating jaws. Autopsies were made in all nine fatal cases, and showed every time the serious degenerative condition of the liver, besides nephritis and degeneration of the heart muscle. Multiple punctiform hemorrhages of mucous membranes were found three times. Mintz found in his case the bacterium coli in the liver parenchyma.

After this analogous experience of six different authors in ten cases, it is evident that acute yellow atrophy of the liver may occur as one of the rarer complications after operations. Our text-books, some of them with otherwise very exhausting chapters on the complications of the post-operative period, and many special essays on the same topic, do not mention this rare complication at all.

As to the etiology of this serious degenerative process in the liver after operations, the few observers disagree in the same line of thought as the authors on the etiology of acute yellow atrophy in general. Some believe it to be of toxic origin; others, of infectious nature.

We have first the clinical observation that chloroform causes sometimes icterus, then we have the proof of autopsies in cases of chloroform death that this anesthetic can produce degeneration of liver cells, and finally we have the same proof by experiments on animals. Therefore, the conclusion that the acute yellow atrophy in the cases under consideration is simply caused by the chloroform seems to be justified. The experience of the ten tabulated cases shows that chloroform was used seven times; in three cases no mention is made of the anesthetic used; but so far as could be ascertained there is no such case on record after an ether anesthesia. But looking over the history of the seven cases in which an accurate clinical history is given, we find that in every case an inflammatory condition existed at the time of operation (abscess, appendicitis, torsion of pedicle, etc.). There is no record of any case after an operation in healthy tissue. Six of the operations were laparotomies; only one was outside the abdomen, the tooth extraction with necrosis of the jaw. This leads to the supposition that infection, furthermore, the handling of inflamed intestines and omentum, is also an important factor. This destructive liver process has happened after the same kind of operations as those in which we meet the thrombosis of the femoral vein, lung infarcts, and other complications of thrombotic and infectious origin. Finally, the fact must not be overlooked that some disposition lessening the resistance of the liver cells, as alcoholism, lead or catarrhal jaundice, was recorded in nearly every one of these cases. Considering this, it seems probable that acute yellow atrophy of the liver, after operation, is caused by infectious processes with the help of the toxic influence of chloroform upon the liver. A predisposition by alcohol, etc., as mentioned, seems to be essential as a causative factor; however, more observations are needed to clear this etiology. For instance, if some one could report a similar case after ether inhalation, we would have to abandon the idea of chloroform being a causative factor.

In nearly every one of the cases considered we find hemorrhagic vomiting as a symptom with the malign jaundice. There seems to be some relation between the degenerative process of the liver as described and hemorrhagic vomiting after operation, as Billroth, von Eiselsberg, Landow, and others have reported. All the later cases happened after serious laparotomies with omental resections, etc., and their autopsies showed multiple

fresh ulcerations of stomach and duodenum, which were also found in Montz's case of acute yellow atrophy of the liver. Eiselsberg believes the ulceration to be caused by septic thrombotic processes, while Landow considers the chloroform to be the cause. Hemorrhagic vomiting is observed as a symptom in most cases of acute yellow atrophy of the liver; Landow on the other hand observed, in one of his cases of hematemesis after appendectomy, simultaneously severe icterus, although without delirium. For this reason the author suspects that some relation exists between the two rare complications of the postoperative period, viz., between the hematemesis and the malign jaundice. Perhaps both are caused by the same factor, chloroform or infection; perhaps the primary changes in both cases are located in the red blood-corpuscles which are essential in carrying the chloroform through the body (Pohl), and also in thrombotic infections. Further observations and experiments will throw light on these questions.

As to the treatment of postoperative yellow atrophy of the liver, these cases give first a lesson in prophylaxis. The long use of chloroform should be avoided where alcoholism or some other chronic ailment has caused a catarrh of the liver ducts, especially when we have to deal with inflammatory conditions of the viscera. The narcosis, if deemed advisable, can be started with chloroform, but after a short time ether should be substituted; for this serious liver affection is at least partially a consequence of chloroform. In a recent publication on "The Accidents of Anesthesia," Eisendrath supports the same idea by saying: "Chloroform should never be given when it is necessary to administer it for more than an hour, on account of its degenerative effect upon the heart muscle and parenchyma of the liver and kidneys."

If we have to deal with a case of malignant jaundice, the odds are surely against us. Recovery will be the exception. The success in the author's case is attributed mostly to venesection and the following intravenous saline infusion. The malignant jaundice is the consequence of a destructive liver disease, just the same as uremia is a sequela to degenerative processes in the kidneys. The French term for the affection, "hepatic insufficiency," characterizes this condition. Considering some good results had with venesection and saline infusion in the treatment of eclampsia, the author decided to try the same treatment in his case, which seemed then almost beyond hope. The result was a free diuresis and abundant bile-stained perspiration, just as he had noticed the beneficial influence of the same treatment in uremia. Bouchard mentioned that all the cases of acute yellow atrophy of the liver which recovered showed this "polyuric crisis"—that is, a sudden large diuresis. Besides the venous infusion after venesection, cathartics, diuretics, and rectal enemata will contribute to a thorough elimination of the toxin produced by the insufficiency of the liver.

THE THERAPEUTIC USE OF ADRENALIN IN URINARY SURGERY.

BARTRINA (*Annales des Maladies des Organes Génito-urinaires*, No. 11, 1903), after calling attention to the fact that adrenalin is a stable crystalline compound 625 times more active than suprarenal extract, which with chloretone acid forms a chloride of adrenalin, states that it is his practice to use this drug in the following combination:

℞ Adrenalin chloride, 1 part;
Normal solution of sodium chloride, 1000 parts;
Chloretone, 5 parts.

The addition of chloretone is for the purpose of accentuating the anesthetic power of the adrenalin. This solution, if kept from the light, remains without alteration indefinitely, and can be sterilized by boiling without any modification of its active principles or its physiological properties. The drug is a vasoconstrictor of great power, and applied to the mucous membranes blanches them in a few minutes. Thus, a drop of a solution of 1 to 1000 applied to an inflamed conjunctiva will efface for hours every sign of active congestion, and in ocular surgery the drug enables the operator to enucleate the eye with the loss of not more than a few drops of blood.

In rhinology, such procedures as the ablation of the inferior turbinated bone, heretofore an extremely bloody proce-

dure, may be rendered practically bloodless by the use of adrenalin. The vasoconstrictor effect of the drug is exerted upon the entire circulatory system when it is administered either by the stomach or by hypodermic injections. Given by the stomach, well diluted, with normal sodium chloride solution, the arterial tension is increased in a few minutes, as are also the cardiac beats. From its anesthetic and hemostatic action it would seem that adrenalin might be useful in a great variety of operations practiced on the urinary organs, such as circumcision, meatotomy, internal urethrotomy. The value of the drug under such circumstances is lessened by the fear of consecutive hemorrhages. Bartrina suggests as one of its most useful applications the diagnosis of the source of blood in the urine. Thus, if after a vesical instillation in case of hematuria the urine remains clear, it is evident that blood must have been of vesical origin. Moreover, even a temporary hemostasis is of great service in making cystoscopic examinations. Albarran especially prepares his patients for such examination by the instillation of 20 to 30 drops of 1-to-1000 adrenalin solution into the membranous and prostatic urethra, passing the cystoscope five or ten minutes later, and thus avoiding the slight bleeding which the introduction of this instrument so often causes.

Bartrina has especially studied the effect of adrenalin in the treatment of urethral strictures. In cases of narrowing so tight as to make the passage of even a filiform quite impossible, it will be found that five or ten minutes after an instillation of adrenalin chloretone small instruments can be introduced without difficulty.

EXSTROPHY OF THE BLADDER.

ORLOFF (*Annales des Maladies des Organes Génito-urinaires,* No. 11, 1902) has performed Maydl's operation in four cases of exstrophy of the bladder. The first case was a boy, twelve years old, with complete exstrophy, dilatation of the ureteral orifices, and a separation of the pubes of four centimeters, combined with double inguinal hernia. After implanting the vesical orifices of the ureters into the bowel, the rectal sphincter was cut, and two large drainage tubes were passed into the rectum. This patient perished two years later of a double pyonephritis, in the meantime having been able to retain his urine during the day, but suffering from nocturnal incontinence. The second patient, seven years old, was under observation for eighteen months, during which time he was able to hold his urine during the day. The third patient, three years old, a girl, perished of peritonitis, probably due to the incomplete suture, five days after operation, which could not be completed on account of the weakened state of the child. The fourth patient, twenty-four years old, perished in less than three weeks after the operation, of an ascending infection.

It will be remembered that Maydl's operation consists in mobilizing the segment of bladder into which the ureters open, removing all of the mucous membrane of this viscus excepting this segment, and implanting the latter into the sigmoid, thus preserving the urethral sphincters, and preventing ascending infection.

Orloff has collected fifty-six cases of Maydl's operation. In eleven cases death has resulted within twenty-one days. Four cases of peritonitis, two of pneumonia, one of anesthesia, and one of acute anemia. As to the functional results the operation causes no irritation of the intestines, and the anal sphincter remains competent. In some cases there is nocturnal incontinence. Five of the forty-five cases which recovered from operation perished of ascending infection. From this it seems as if this complication, invariable after the older forms of direct ureter transplantation, is the exception rather than the rule. The operation is elaborate and time-consuming, requiring between two and three hours for its completion. The postoperative period is subject to many complications. Exceptionally it runs a smooth course, but even under such circumstances, some renal colic and albuminuria are noted. In seven cases a fecal fistula was formed, requiring in three cases a second operation for closure. In six cases pneumonia developed. In one case there was phlebitis affecting the leg.

FRACTURED PATELLA; TREATMENT.

The proper treatment of fractured patella depends, MIKULICZ-RADECKI (*British Medical Journal,* Dec. 13, 1902) reminds us, on whether or not the fractured patella can unite with useful results without suture of the bone.

In determining the condition to be remedied, it is necessary to distinguish between blow, tear, and combination fractures. In tear and combination fractures not only is the patella broken, but the parapatellar ligaments are torn apart. In this way the continuity of the quadriceps is interrupted, and the fragments are displaced further and further from each other. The result as to function can then never be a good one, for only a long, feebly resisting scar forms the connecting link. If the patient soon after the injury is able to straighten the knee even with the help of a second person, this is a fact in favor of the maintenance of continuity. When the patient attempts a movement of extension, and the contracting quadriceps plainly draws up the upper fragment and so perceptibly increases the separation, there is evidently complete solution of continuity. In the same way in a similar case an increase in the gap occurs if the knee-joint is passively flexed.

With few exceptions, Mikulicz has abstained from suturing the patella in blow fractures, and has limited himself exclusively to medico-mechanical treatment. In combination and tear fractures he carries out suturing of the bones. He advocates deciding at the end of the first week by the latest what treatment to pursue, the operation becoming much more difficult after that time.

With regard to the medico-mechanical treatment of fractured patella its principles are known everywhere—immobilization of the joint for a short time with elastic compression to hasten reabsorption of the effused blood, massage of the knee-joint, especially the quadriceps, starting from the second to the fourth day; the patient gets up at the end of the first week with a removable plaster-of-Paris splint, which he lays aside at the end of the third week. At this period careful active and passive movements begin, and finally exercises with medico-mechanical apparatus.

With regard to the suture of the bones, Mikulicz operates without exsanguinating the limb. He makes the incision in a transverse direction, corresponding to the line of fracture, and of course long enough not only to expose the patella, but also the torn parapatellar ligaments and the torn part of the capsule. This incision gives a clear view of the parapatellar ligaments. For the suture recourse is had to wire. No sublimate solution can be used, for it would render the wire brittle. He places through the patella—according to the length of the line of fracture—three or four sutures, which do not include the cartilage. The accessory ligaments should be sutured on each side with one or two sutures as well as the patella. In this way the likelihood of a subsequent refracture of the patella is much lessened. According to the method, five to eight sutures in all will be applied in uniting the patella. Throughout the whole operation only asepsis is practiced. The blood-clot is removed with a sharp spoon during irrigation with sterile boiled salt solution. The wound is not drained, but completely closed; only one centimeter at each end of the skin incision remains unsutured. The gap yawning slightly or not at all is quite sufficient to allow for the escape of any subsequent oozing, and does not by so doing prevent healing by first intention. The after-treatment of sutured cases is in the main the same as of the unsutured, only the limb is immobilized during the healing of the wound—that is, for the first eight or ten days, so that medico-mechanical treatment begins about a week later.

The foregoing refers chiefly to operations forthwith after the injury. With later operations, in which the patient comes under treatment as long as six months after the accident, there is almost always great difficulty in pulling down the upper fragment of the patella, strongly retracted by the shortened quadriceps. In most cases the tension of the muscle is abolished by making a V-shaped incision in the region of the rectus and cuneus, not in the tendon, which is converted into a Y by pulling down the lower ends; the

continuity of the muscle is restored by sewing up the edges of the cut in the muscle with strong catgut sutures.

Of the forty-five cases reported by Mikulicz sixteen were treated without operation; of these fifteen were recent and one an old fracture. In the last (it was a combination fracture) no operation was performed, in spite of the existing separation, on account of severe nephritis. Capacity for use in this case remained continuously bad; the patient died three and a quarter years after the accident. Of the fifteen remaining cases, in three a combination and in twelve a pure blow fracture existed. In eight instances the result was good, in one moderate. In the last case, even after six and a half years, according to the account in the letter, weakness and fatigue of the leg existed. In addition in this case there was a combination fracture. A second case of combination fracture showed a good result as to function ten years after the injury in spite of a separation of 2½ centimeters.

Of the seven subsequently investigated cases, in five the patella appeared on palpation to be firmly united. In three cases the *x*-ray picture showed a fissure at the line of fracture, while in the other two the line of fracture could no longer be recognized.

Suture of the bones was done thirty times for twenty-nine patients—twice for one patient in consequence of refracture. In twenty-one instances they were recent fractures, which were operated on within the first week; nine times they were old fractures. Of the recent fractures, seventeen were tear or combination fractures, four pure blow fractures. The latter were operated on in spite of the continuity of the quadriceps tendon being maintained by the parapatellar ligaments, because of the considerable separation of the fragments. The occupation of the patients, which demanded restoration as complete as possible to normal conditions, was also a consideration.

Of the thirty cases, the operation wound healed by first intention with no trouble in twenty-six. In four instances healing was delayed by infection, and of these two were cases of late operation. The four cases of infection all occurred before the institution of the strict asepsis practiced later. The seventeen cases operated on in the last six and a half years have healed without exception by first intention without the slightest interruption.

Both methods—the operative and the non-operative—give equally good results with a right interpretation of indications, and a correct technique. These methods do not stand in opposition to each other as alternatives, but each supplements the other, and has its own definite, sharply marked-off indications.

SURGICAL TREATMENT OF TYPHOID FEVER.

J. S. Dauriac (*La Presse Médicale*, July 23, 1902), as the result of inferences drawn from the successful operative treatment of one case of typhoid fever, suggests the advisability of routine surgical interference in that disease. The rationale of this treatment is to divert, by means of an artificial anus, the passage of fecal material from over the ulcerations in the intestines, thereby avoiding the absorption of the poisonous products of fermentation, and at the same time observing a general principle of medicine and surgery —that of placing a diseased organ at rest. The limitation of the ulcerations, except in a very few cases, to Peyer's patches and the follicles lying in the terminal portion of the ileum makes it possible to establish an artificial anus in that portion of the gut above the diseased area, and yet so low as to interfere in no way with the process of food absorption—*i.e.*, in the upper portion of the ileum.

The operative technique employed upon the reported case, which was one complicated by severe hemorrhage and shock on the seventeenth day of the disease, was to make a slightly curved incision three inches in length in the right flank three fingerbreadths above the anterior superior spine of the ileum, under local cocaine anesthesia. Being guided by ecchymoses on the serous coat, a portion of the small intestine just above the site of these pathological changes was drawn up in a loop into the wound and fixed to the peritoneum with interrupted catgut sutures. The gut was then cut transversely and the cut

edges turned back and sutured to the skin edges, the line of suturing being sealed with cotton and iodoform collodion.

The after-treatment of this case consisted in the daily lavage of that portion of the gut below the site of the artificial anus with one or two quarts of a salt solution, the fluid being passed through the wound slowly and under low pressure and expelled by the rectum; and the institution of a more liberal diet for the sustenance of the patient. On the sixth day following the operation the temperature was normal, and continued so until complete recovery. The diet at this time was increased to an egg and a chop daily without any deleterious effect. The artificial anus was closed on the thirty-sixth day after the operation, but this interval was much longer than necessary.

This treatment is advised in the belief that it will be the means of preventing complications, that it will shorten the period of fever, and will permit a more liberal diet, thereby avoiding the asthenia accompanying typhoid fever.

TREATMENT OF LUPUS WITH ROENTGEN RAYS.

From observations made in nine cases of treatment of lupus by means of Roentgen rays, A. BLANDAMOUR (*La Semaine Médicale,* Dec. 3, 1902) concludes that this method constitutes an excellent therapeutic measure.

The method employed up to the present time has consisted in exposing the lupus areas, for a sufficient length of time, to rays powerful enough to produce a maceration, vesiculation, and ulceration of the entire surface. In these experiments bulbs possessing different radiating powers are used. The most favorable results were obtained from rays 5200 and 19,000 times as strong as the rays of uranium. The time of exposure varied from twenty-four to forty-eight hours. From the results of these cases it seems possible, by using much stronger rays, say 1,000,000 times as strong as uranium, applied repeatedly and for a very short time, to obtain the same effect without causing the painful ulceration of the skin.

It was seen in those cases in which the rays were too weak to produce any ulceration that the effect upon the lesions was to diminish the hyperemia and tumefaction.

The result of the treatment was to produce in most of the cases white, soft, pliable cicatrices at the end of three to six weeks, constituting a perfect cure which appears to be lasting.

This therapeutic procedure has the advantage over phototherapy of being more rapid and much easier in application. In order to avoid ulceration, and consequent infection, it is necessary to avoid too prolonged applications, to apply rays of high radiating power, and to protect the healthy skin with lead-foil.

BACTERIURIA.

JANET (*Annales des Maladies des Organes Génito-urinaires,* No. 3, 1903) recognizes external and internal causes of urinary infection. A bacteriuria of external origin is in the beginning a cystitis involving only the mucous membrane of the bladder and due to one of several forms of bacterial growth, usually colon bacilli, ordinary bacilli, and cocci. Prognosis is extremely good in the absence of accompanying infection of the ureters and renal pelves, and treatment consists of vesical washings and instillations of silver salts.

The bacteriuria of internal origin is usually obscure in etiology, and rebellious to treatment, since a simple disinfection of the urinary tract is not enough to remove the trouble. This bacteriuria may be due to direct contact, or immediate proximity of an organ which is normally or pathologically infected, or may be carried by means of the circulation. Bacteriuria from indirect contact or proximity is such a one as is observed accompanying a prostatic infection or a gonorrheal vesiculitis, each of which may reinfect the bladder as often as the latter is cured. It is generally due to cocci, sometimes to the colon bacillus. It is needful to determine whether or not prostatitis be the cause or effect of the bacteriuria, since microbes eliminated through the urine may readily set up a urethritis, which may be microbic or not, according to the capa-

bility of such microbes of growing in the urethral mucous membrane. It is not uncommon to observe an infection of the prostate secondary to a periprostatitis or rectitis, or a fistula or fissure, or even hemorrhoids. The bacteriuria resulting is at first an essentially vesical one; whether or not it is ascending can only be determined by catheterization of the ureters and an examination of the urine which escapes through these catheters. The procedure is objectionable, since there is always the danger of infecting a ureter which has not yet become involved. A simpler and safer way has been suggested by Janet. This consists in approximately counting the number of microbes in the urine before and after a thorough vesical lavage. If the infection is renal, the two tubes will show about an equal number of growths. If it is purely vesical, the second tube will show very few growths. The treatment of this vesical bacteriuria of vesicular or prostatic origin is purely local, and consists of lavage, massage and instillations, and the disinfection of the urinary tract by the ordinary methods of procedure. Urotropin is particularly serviceable, together with benzoate of soda if the urine is alkaline.

The other cases of bacteriuria from contact or close relation of infected organs may arise from the rectum, the intestine, and the genital organs. This bacteriuria may be called prostatic, vesical, urethral, or renal. This mode of infection is more common than is usually believed.

Bacteriuria, through the medium of the blood, is best typified by that form of urinary infection which follows typhoid fever. The diagnosis of this form of urinary infection is extremely difficult. There is one symptom which particularly characterizes it, namely, its evolution in a series of paroxysms, each accompanied by fever.

Among the internal causes of bacteriuria is to be named mucomembranous enteritis, which causes the colon bacillus to appear in the urine. This bacteriuria is undoubtedly the cause of the persistent cystitis from which women troubled with constipation so often suffer. The route taken by the microbes in their passage from an inflamed intestine to the bladder is unknown, though it has been held by some writers that the infection may pass directly from the rectum to the bladder or from the intestines to the ureters.

As a treatment for this form of bacteriuria Janet finds remedies directed to the condition of the urine perfectly futile. He puts these patients on a very careful diet made up mainly of milk, if this is well borne; gives thorough lavage of the lower bowel with normal salt solution, and subjects his patients to active purgation. After three months of such treatment the patient is put back on an ordinary diet. Urotropin is the best drug to give internally. It should be administered in doses of twenty grains a day. At times this quantity may be tripled. If the acidity of the urine is watched, it is easy to obtain good results by small doses of urotropin. This drug, however, is not always well tolerated. It sometimes causes vesical irritability, even in small doses. In one instance Janet has observed that it produced a slight hematuria (in doses of three grammes), and once having given eight grammes to a powerful man whose kidneys were sound, there developed shortly after renal colic lasting several hours. Believing this to be a coincidence, Janet ordered the drug taken the next day. It was followed by precisely the same result. Patients should be tested for idiosyncrasy before beginning the urotropin in full doses.

FRACTURE OF THE ASTRAGALUS.

ALBERTIN *(Revue de Chirurgie,* No. 1, 1903) removed the astragalus from a patient who had sustained extensive injury by a fall. This patient four months later experienced so much pain in walking that he was quite crippled. There was such marked ankylosis in the valgus position that Sime's amputation was performed. In another case he removed an internal fragment which by its projection at the back of the foot limited flexion. The result was extremely good. When from six months to a year after the injury patients still experience great pain in walking and require the use of crutches, Albertin is

inclined to recommend astragalectomy, since in young people this gives excellent functional results. In the treatment of simple fractures of the astragalus, without deformity and not seriously compromising the articular surfaces, massage following a short immobilization produces the best result. When fractures are multiple and involve the articular surfaces, extirpation of fragments or of the entire bone is indicated. In exceptional cases Sime's amputation will be required. Villard reports a case long crippled because of such fracture promptly cured by astragalectomy, the bone when removed exhibiting deformity and callus formation.

FRACTURE OF THE GREATER PROCESS OF THE CALCANEUM.

According to CARLESS and MAYOU *(London Practitioner,* December, 1902) it is only since the introduction of radiography that the frequency with which fractures of the calcaneum occur has been recognized, and even now but few reports as to their characters have been published. Radiography, however, has demonstrated that there is a fairly common fracture of the os calcis which results from falls on the feet.

The essential element in the force that produces the fracture is a fall from a height on the heels, the patient alighting either in the standing or squatting posture. Of course other fractures may result from similar violence, and it is impossible to dogmatize as to what injury may be expected from any particular fall. Slight differences in the strength and elasticity of the bones, slight alterations in the exact direction of the force, may result in very different injuries. In one case of a long drop down a lift shaft, both astragali were "pulped," and this must have saved the man's life, as there was comparatively little cerebral commotion. In another case a young man fell through a glass skylight from a great height and sustained a compound subastragaloid dislocation, together with other injuries, which proved fatal.

Left to themselves or treated merely by the use of evaporating lotions, these fractures are very liable to lead to troublesome and painful results. A painful variety of traumatic flatfoot results owing to the depression of the head of the astragalus, and the formation of a large mass of callus on the under surface of the calcaneum, occupying the cleft between the displaced under surface of the anterior fragment and the front end of the body of the bone. Another cause of the pain is a projection on the same lower surface due to the deposit of new bone from the torn periosteum beneath the insertion of the plantar ligaments. Unfortunately, in this form of flatfoot the use of plantar pads is of very little use, as the constant pressure increases the pain.

The treatment of these cases is somewhat unsatisfactory. In the early stages when the ecchymosis is considerable, all that can be done is to bandage the part and keep on evaporating lotions until the swelling has subsided. If then the displacement is considerable, and the arch of the foot much depressed, it is advisable to force the foot into a position of inversion under an anesthetic, either by hand or by the use of a wrench, and put it up in plaster of Paris. Should the deformity not be great, massage may be commenced at a tolerably early date, and possibly the employment of a slight instep pad may enable the patient subsequently to walk about without much pain. In old-standing cases where there has been much deformity and the pain of walking is considerable, it may be possible to remove a wedge of bone irrespective of joints, or to take out either the head of the astragalus or even the whole bone.

A CASE OF PURULENT PERICARDITIS COMPLICATED BY EMPYEMA.

PETERS *(Edinburgh Medical Journal,* March, 1903) reports the case of a boy aged seven, admitted to the Victoria Hospital for Sick Children, Toronto, complaining of pain in the abdomen, cough, and great shortness of breath. Duration of illness was about one month. He showed signs of great dyspnea, and had to be propped up in bed. Cyanosis was very well marked, and his extremities were cold. Temperature 98°, pulse 100, and respiration 36. No edema anywhere. Abdomen was prominent in its upper portion especially, and was very tender.

Umbilicus protruded, pointing to considerable increase in the intra-abdominal pressure. An unsatisfactory attempt was made to evacuate an enormous collection of fluid in the pericardium, which was dangerously interfering with heart action and respiration, and depressing the diaphragm in the median line to a point more than one inch below the tip of the ensiform cartilage. The liver reached two fingerbreadths below the umbilicus, which was not wholly due to depression, but partially to enlargement due to venous congestion.

The urgency of the symptoms was, however, much relieved by the incomplete operation.

Aspiration of the pericardium having proven unsatisfactory, it was decided to make a free incision into the pericardium to secure thorough drainage. Local anesthesia was still used, as the extremely low, almost pulseless, condition of the patient did not permit of a general anesthetic being given.

The route recommended by Rotch, namely, the fifth intercostal space on the right side, about half an inch from the sternum, was selected as the seat of incision, but had to be abandoned, as the right pleura was encountered *en route,* but was not damaged. The little incision was stitched up, and subsequently healed by first intention. Paget's suggestion was now followed, namely, to open in the fifth interspace on the left side. Here also the left pleura was opened, and a small amount of air aspirated into the thorax. The wound was packed with iodoform gauze, and healed kindly. Upon inadvertently producing this wound, the fact that there seemed to be but little suction power in the pleura was developed. Probably the presence of the huge pericardial sac in the left chest had already produced such collapse of the lung here that but little more negative pressure existed.

Failing to reach the pericardium safely through either of these incisions, the left fourth interspace, three-fourths of an inch from the sternum, was selected; this proved successful. As soon as the pericardium was opened a considerable quantity of seropurulent fluid gushed out, but after a few moments the fluid escaped only during expiration. After 17 ounces of fluid had been evacuated, the lower border of the liver was found to have moved up two fingerbreadths; when 29 ounces had come away this organ had almost regained its normal size and position, and examination showed that nearly the whole left of the chest had become resonant. The rapidity with which the signs of urgent dyspnea and cyanosis vanished as the fluid came away was very striking.

At the time of operation the child was practically moribund, pulse scarcely perceptible at the wrist, deep cyanosis, and marked mental torpor. When the fluid began to flow the improvement in the pulse was almost instantaneous, and the cyanosis rapidly disappeared.

The patient slept well that night, and was able to assume almost a horizontal posture. The fluid removed was highly albuminous and coagulable, and was found to contain the staphylococcus pyogenes aureus.

The following day 10 ounces of pus came away through a long tube conducted to a vessel beneath the cot; 39 ounces was actually measured as coming away during operation and the twenty-four hours succeeding, and a considerable quantity was lost in the dressings.

Two weeks after operation the wound in the pericardium was still discharging slightly, but the tube had been removed. The left chest was almost immobile. Dulness with increased sense of resistance existed all over this side, but did not now extend at all to the right of the sternum. All over the affected side the breathing was tubular and fairly loud, and there were many medium crepitations. The vocal resonance was rather increased. In an adult such conditions might have suggested consolidation of the left lung, but in a child were quite compatible with the presence of fluid. The liver could be felt almost down to the level of the umbilicus, but was soft and scarcely tender at all.

An exploratory puncture at the angle of the left scapula showed clear serum, aspiration bringing away 24 ounces of fluid, which was found to be highly albuminous and to contain staphylococcus pyogenes aureus. The dulness immedi-

ately cleared up, and the breathing became vesicular. The temperature continued to fluctuate, and on November 21 reached 104°, but after that gradually fell. On December 3, the left side being now quite dull again, a free opening into the pleura through the seventh intercostal space in the midaxillary line was made, and 30 ounces of pus was evacuated. The patient took ether well.

From that time on he did well; the temperature became normal, and weight increased rapidly. The pleural wound continued to discharge for several weeks, but healed before he left the hospital on January 16, 1902.

Reports received eleven months after the operation were to the effect that the lad was in perfect health, running and playing as other boys, and showing no evidence of embarrassment either of circulation or respiration.

A SIMPLE METHOD OF OPERATING ON PILES.

MITCHELL (*British Medical Journal*, Feb. 28, 1903) describes the following method of operating on hemorrhoids which he has employed for the past four years, and which has proved both simple and efficient. It is quite possible that other operators have adopted the same principle, but he states there is apparently no record of such.

The sphincter having been dilated and the piles brought fully into view, the mucous membrane is sponged with a solution of corrosive sublimate 1 in 1000. A pile is then clamped in a long narrow-bladed forceps (Kocher's artery forceps answer admirably). The redundant mucous membrane and pile is cut away by scissors. A curved needle threaded with catgut hardened in formalin is then inserted immediately above the clamp and the end of the catgut secured by a knot. A continuous suture is next rapidly applied round the clamp. The clamp is withdrawn (this can be done without the slightest difficulty) and the suture tightened, leaving a vertical line of continuous sutures within the rectum. The upper end of the ligature, which is left long for the purpose, should be held firmly in the left hand whilst the lower end is being tightened, so as to prevent puckering. Each pile is treated similarly in turn.

The advantages of this method are that it can be very rapidly carried out; there is no loss of blood; the suture, being continuous, is an efficient hemostatic after the forceps have been removed; it cannot possibly slip, so there is no danger of subsequent hemorrhage. No raw surface being left, the bowels are encouraged to act regularly from the first. As a rule patients are up and about at the end of a week. The catgut is absorbed in eight to ten days and does not require removal.

SURGICAL TREATMENT OF GASTROPTOSIS.

BEYEA (*University of Pennsylvania Medical Bulletin*, February, 1903) directs attention to the surgical treatment of gastroptosis, and describes in detail a method of elevating the stomach by shortening of the gastrohepatic and gastrophrenic ligaments.

The frequency of gastroptosis may be estimated from the publication of Steele and Francine, to the effect that sixty-five cases were observed and treated during two years in one of the medical dispensaries of the University Hospital. Glenard observed the disease 400 times in 1300 patients.

The etiology of gastroptosis, like that of floating kidney and retrodisplacement of the uterus, is not definitely known. However, two sets of causes are generally believed to exist—predisposing and exciting. The former are congenital weakness and hereditary predisposition, the patient with gastroptosis representing an almost characteristic type of individual. The exciting causes are thought to be tight lacing, rapid emaciation, and changes in the intra-abdominal pressure, as due to constricting bands, or relaxation of the abdominal walls and diastasis of the recti muscles.

The upper curvature of the stomach, through inflation by means of the stomach-tube and auscultatory percussion, is outlined in the more pronounced cases midway between the xiphoid cartilage and umbilicus.

The supporting ligaments of the stomach, the gastrohepatic and gastrophrenic

ligaments, are lengthened or stretched out, and proportionate to the degree of displacement. As a result of the ptosis there is frequently a secondary dilatation of the stomach, particularly of the pyloric end. In some instances also it is believed a primary dilatation of the stomach occurs, with secondary gastroptosis.

The symptoms are those of gastromotor insufficiency, brought on by gastric and intestinal atony, by the mechanical disturbances caused by the descent of the organ, and neurasthenia.

The patient comes to the physician complaining of pressure and fulness in the epigastric region, abdominal distention and flatulence, pain (gastralgia) coming on at irregular intervals and independent of the digestive action or the quantity or quality of food. Eructations are usually, and nausea and vomiting frequently, complained of. There are numerous pains during bodily exertion. Intense lumbago is a frequent symptom. The patient is usually, and often profoundly, neurasthenic. Nausea and vomiting in the more severe cases occur several times each day, little food is retained, the patient becomes more and more emaciated, neurasthenic, feeble, anemic, even bed-ridden, and a confirmed invalid. The picture in a few words is that of chronic severe atonic dyspepsia, with neurasthenia and increasing emaciation.

The medical treatment consists in the administration of strychnine and other tonics; regulation of the bowels; lavage; the selection of a suitable nourishing diet; massage, electricity, cold-water applications, and abdominal gymnastic exercises to strengthen the abdominal muscles and increase the intra-abdominal pressure; the avoidance of tight lacing or wearing of any garment which restricts the waist.

The mechanical treatment consists in applying a properly selected, adapted, and accurately fitting abdominal bandage to increase the intra-abdominal pressure and relieve the splanchnic congestion and symptoms of weight. When there is great weakness the rest cure is a most efficient means of treatment. Alternating cold and hot douches are often efficient in restoring partial tonicity to the muscular wall.

The medical and mechanical treatment when skilfully and persistently applied, in a large proportion of the cases, gives much symptomatic relief and the patient is able to live on in more or less comfort. The application of an abdominal binder, according to some authorities, may succeed in elevating the stomach one or two inches with more marked relief. However, the patient remains constantly under observation, and is never restored to good health.

There is a considerable percentage of cases associated with severe symptoms in which this medical and mechanical treatment gives little or no relief, the dyspeptic symptoms continue severe, vomiting persists, the neurasthenia is profound, the emaciation and illness continue, and the patient seems destined to chronic invalidism. It was under these conditions, in such a case, that the surgical elevation of the stomach was suggested and practiced for the first time by Duret, of Lille, in 1894. The patient, a married woman, aged fifty-one years, had suffered with the severe symptoms of gastroptosis for three years, was emaciated, and weighed eighty-four pounds. The greater curvature of the stomach was outlined four fingerbreadths above the symphysis. The operation which Duret devised and practiced on this patient in March, 1894, consisted in the passing of a continuous fine silk suture from right to left through, first, the fascia, muscle, and peritoneum of the abdominal wall and the serosa and muscularis of the stomach near the lesser curvature, then twice at intervals through the parietal peritoneum (left intact in the incision) and the serosa and muscularis of the stomach, following the line of the lesser curvature, and finally through the peritoneum, muscle, and fascia of the abdominal wall of the opposite side. This suture was placed in the wound just below the xiphoid cartilage. When the suture was knotted the stomach was elevated and the lesser curvature firmly fixed to the abdominal wall. Two years later the patient's health was greatly improved, and she had gained twenty-five pounds in weight.

After a careful study of the anatomical relations and the ligamentary supports of the stomach on the cadaver, and consider-

ing the importance of the preservation of the physiological mobility of a hollow viscus, particularly the stomach, Beyea devised and practiced for the first time on April 19, 1898, the following operation for gastroptosis:

The patient, after having been prepared for the operation of celiotomy and anesthetized, was placed upon the operating table in a position opposite to that employed for operations through the lower portion of the abdomen. The object of this position was to permit the elevation of the chest and upper portion of the abdomen, which would allow gravitation of the intestines and stomach out of the field of operation and give the greatest operative space. An incision about three inches in length was made through the linea alba, midway between the xiphoid cartilage and the umbilicus. The tissues were separated in the usual manner and the peritoneal cavity opened, exposing a small portion of the lesser curvature and cardiac end of the stomach, the gastrohepatic ligament or omentum, gastrophrenic ligament, and the lower portion of the left lobe of the liver. The table was then elevated to the reversed Trendelenburg position, and the stomach displaced still further downward and out of the wound by means of gauze sponges. This procedure caused the gastrohepatic and gastrophrenic ligaments to be slightly stretched and separated from the underlying structures, which permitted an accurate determination of the length of these ligaments, and very much facilitated operative manipulations. The gastrophrenic ligament was seen well developed, and evidently formed a strong support to the cardiac end of the stomach. The joining portion of the gastrohepatic ligament was composed of thin, delicate peritoneum, increasing in thickness and strength toward the right or pyloric end of the stomach. Retractors were introduced and the liver held aside by placing a gauze sponge beneath a retractor. Three rows of interrupted sutures were then introduced so as to plicate and thus shorten the gastrohepatic and gastrophrenic ligaments in the following manner: The first row, beginning in the gastrophrenic ligament and extending across the gastrohepatic ligament to almost opposite the pyloric orifice and hepaticoduodenal ligament, was introduced so as to form a plication in the center of these ligaments, and included from above downward or vertically about four centimeters of tissue. They were practically mattress sutures, including sufficient of the delicate tissue (one centimeter) to insure against their tearing out. Five sutures, about one inch apart, were introduced from right to left, and caught in a hemostatic forceps. The next row of sutures was introduced in the same manner, but 2.5 centimeters above and below the first row. Then a third row was introduced below, just above the gastric vessels, and a short distance below the diaphragm and liver. The suturing was strictly confined to the normal ligamentary supports, and the distance between the rows from left to right was increased with the length of the ligaments, being greater toward the right. The gauze sponges were then removed, and the first, then the second, and finally the third row of sutures secured, the stomach, particularly the pyloric end, being elevated to a little above the normal position. The abdominal wound was closed by suturing the peritoneum with catgut, fascia with catgut, the skin by an intracutaneous silk suture, and three reënforcing mass silkworm-gut sutures passed through the skin and fascia.

The wound was dressed by two layers of sterile gauze held in position by antiseptic collodion, covered with several more layers of sterile gauze. In order to assist in giving support to the stomach and aid in preventing traction upon the sutures during the early part of the convalescence, a large compress of gauze and cotton was placed over the lower two-thirds of the abdomen, and the dressing and compress held in place by a many-tailed flannel binder. Fine silk (No. 3) was employed for suturing the gastrohepatic and gastrophrenic ligaments. The needles were small, curved, and round-pointed. This particular needle was selected to prevent tearing of the tissue in the introduction of the sutures. Care was taken to place the sutures evenly and accurately without causing tension. Each suture also caught the greatest possible amount of tissue practicable, in order to

give the greatest strength and form a wide adhesion.

After the operation, which continued for forty minutes, the patient's convalescence was normal, the suffering being not greater than after a simple exploratory celiotomy. After the first five hours the pulse was never more frequent than 78, and the temperature but once reached 100° F. The patient was given nothing by the mouth for twenty-four hours, except small quantities of hot water. The usual postoperative treatment was followed, except that the lower end of the bed was elevated. The bowels were open at the end of forty-eight hours. The patient was kept on small amounts of liquid food, frequently administered, for a week, and in bed in the recumbent position for four weeks.

The principle of this operation is that by placing three rows of interrupted silk sutures from above downward, and from right to left through the gastrohepatic and gastrophrenic ligaments, a single broad, transverse fold or plication is formed in the ligaments, shortening these ligamentary supports and elevating the stomach to normal position. The normal ligaments are shortened and the stomach elevated to position without in the least disturbing the physiological mobility of the organ.

No abnormal adhesions are formed between other structures; there is no fixation of the stomach, and the operation must be considered physiologically and surgically ideal. With the formation of a broad surface of adhesion between the surfaces plicated, secured by the introduction of three rows of sutures, sufficient strength is gained in the shortened ligaments to permanently maintain the stomach in normal position. That this is true is determined by the physical examination of one case three and one-half years and one and one-half years after operation. Further, the investigations of Scarpa and Hutsche have determined that a single layer of peritoneum can maintain from 7.5 to 22 kilogrammes of weight.

The author has operated upon four cases by this method, and including Bier's four cases eight patients have up to the present time been operated upon by the plication of the gastrohepatic and gastrophrenic ligaments for the purposes of study.

All have suffered from five to fifteen years with the characteristic and very severe symptoms of gastroptosis. In two a right kidney had been operated upon without relief of the symptoms. All were emaciated, weighing between 78 and 120 pounds. In every instance the form of gastroptosis was the subvertical and pronounced. In three cases the upper curvature of the stomach was at or just below the umbilicus, in one two inches below the umbilicus, in one two inches above the umbilicus, and in three midway between the umbilicus and xiphoid cartilage. In three an associated dilatation of the stomach was the diagnosis, but not demonstrable at operation. In none was there diastasis of the recti muscles or relaxation of the abdominal walls, although four had borne children. Certainly, in every case, the severe symptoms of gastroptosis rendered the patients chronic invalids and incapacitated them for any occupation or social duty. All had been treated faithfully for a great length of time with medicine, hygiene, diet, bandages, and the rest cure; and in the author's four cases the physicians insisted that they were unable to relieve their patients, and the patients themselves were at once willing, because of their suffering, to risk the danger of operation for the sake of a possible cure.

The convalescence in each case following operation was normal and easy. The patients were kept in bed in the recumbent position for four weeks after operation, and on a special diet.

Seven of these patients have now been observed from seven months to three and one-half years after operation. In every case the improvement in health has been most remarkable, and the relief of symptoms complete. The dyspeptic and neurasthenic symptoms are entirely relieved; they take without restriction any character of food. All have gained markedly in weight, and this gain has been lasting and gradually increased with time, one after three and one-half years having gained forty pounds, and one after one year twenty-five pounds. Further, the gain in weight began immediately after

the patients left the hospital, the least gain in two months being ten pounds, and the greatest nineteen and one-half pounds. In no instance, regardless of the time which has elapsed since operation, has the stomach changed in position. In three the line of greater curvature is from one to two inches above the umbilicus, and in the other four one to one and one-half inches below the umbilicus.

The immediate and lasting relief of symptoms, improvement in nutrition, and gain in weight in the case of every patient thus far operated upon by the shortening of the gastrohepatic and gastrophrenic ligaments would seem to prove that the dyspeptic symptoms were induced by the abnormal position of and secondary changes in the stomach in gastroptosis, and that the neurasthenia is not an essential but an induced neurasthenia. Also, the remarkable lasting effect of the simple shortening of the ligaments gives rise to the conclusion that the anatomical cause of gastroptosis is a lengthening of these ligaments. The completeness of the relief and the extraordinary restoration to health of these seven patients who had suffered for years, the simplicity of the operation (which restores the stomach to normal position by shortening its natural ligaments, without removal of tissue or the formation of abnormal adhesions), and the fact that it is practically free from danger (probably being not greater than one-fourth of one per cent), must strongly recommend this operation in every case of gastroptosis where the suffering is great. The medical and mechanical treatment at best secures only partial relief of symptoms, does not restore the position of the stomach (the cause of the illness), and entails constant treatment, diet, and the wearing of a cumbersome bandage, while the operation promises to at once completely and permanently restore the patient's health.

The patients thus far operated upon represent but one class, those with gastroptosis and without relaxation of the abdominal walls or diastasis of the recti muscles. Experience alone can teach what influence the operation will have where the relaxation of the abdominal walls is active in the production of the displacement of the stomach.

Reasoning from the influence of ventrosuspension or Alexander's operation in retrodisplacement of the uterus, under the same conditions the plication of the ligamentary supports of the stomach would ever and alone be efficient. If, however, the contrary were determined to be true, the operation might easily be supplemented by the resection of the abdominal fascia as recommended by Webster. A necessary adjunct to the operation where a floating kidney is present is the operation of nephropexy. The author feels justified in prophesying that the medical and mechanical treatments of gastroptosis, like the bandage and pad in floating kidney, and the pessary in retrodisplacement of the uterus, will in the not far distant future be greatly replaced by some surgical procedure as he describes.

THE ANATOMICAL DIFFICULTY IN REPLACING OLD SUBCORACOID SHOULDER DISLOCATIONS, WITH AN OPEN METHOD FOR SUCH REPLACEMENTS.

DOLLINGER (*Deutsche Zeitschrift für Chirurgie*, Bd. 66, H. 3-4) reports nineteen cases of old shoulder dislocations upon which he has operated during the last five years. Six of these were replaced by Kocher's method, three were complicated by an arm fracture, and ten were treated by the method to be described.

According to Kocher's studies the difficulties in the way of successful operation in cases of old subcoracoid luxations are due chiefly to the formation of strong adhesions near the coracohumeral ligament. These fibrous bands hold the head of the humerus in its new position and also fill up the glenoid fossa. He therefore advises the bloodless method. Engle and v. Bergmann encourage reposition by arthrotomy.

The anatomical difficulties which militate against the open method are generally considered to be as follows: Fracture of the greater or lesser tuberosity, of the glenoid fossa, of the surgical or anatomical neck, callosities or osteophytes of the head or the neck which have penetrated the articular capsule, and interposition of the soft parts, such as the long head of the biceps and fibrous adhesions.

In the usual open method all these structures are severed or removed, the neck of the humerus exposed, the glenoid fossa cleaned out, and the articular head then forcibly brought into position.

Dollinger believes the number of cases in which callosities, fibrous adhesions, etc., are found has been exaggerated, and therefore, when a bloodless procedure is not available he practices his own open method.

The arm is so placed that the elbow is at right angles, and the deltoid, coracobrachialis, and biceps relaxed. The incision begins at the clavicle and runs parallel to the cephalic vein down to the pectoralis major. When the vein and the deltoid are drawn aside there is exposed on the outside the coracobrachialis and the short head of the biceps, on the inside the pectoralis major, and above is seen the pectoralis minor, as well as the lesser tuberosity of the humerus. In the cases reported the articular head was turned backward and rested with its point on the anterior surface of the scapula below the coracoid process, about in the position of the bursa of the subscapularis, with its posterior side at the forward edge of the glenoid fossa. From the greater tuberosity there was seen a fibrous band which extended outward and over the glenoid fossa. This is composed of the tendons of the supra- and infraspinatus and teres minor. It covers the coraco- and glenohumeral ligaments. These tendons have, in all probability, been mistaken for fibrous adhesions and described as such. The arm is now so placed that the lesser tuberosity is turned outward; the head of the humerus now comes into view covered with the subscapularis. It is this muscle which prevents the replacement of the bone; hence its tendon is severed near its insertion, and the reposition is then effected according to the Kocher method.

Should replacement fail after section of this tendon, the glenoid fossa should be examined. This is accomplished by stretching the subscapularis forward, having the supra- and infraspinatus relaxed, then firmly drawing the head of the humerus downward, when the finger may be slipped through the slit in the cut tendon and so explore the fossa.

The cases reported made favorable recoveries, though the greatest care must be given the wound, and too much must not be expected of muscles which have stiffened for long periods of time in such abnormal positions.

ARTERIAL SUTURES.

SCHMITZ *(Deutsche Zeitschrift für Chirurgie,* Bd. 66, Heft 3-4) has collected the literature on the suturing of arteries, abstracting, classifying, and completely reviewing the subject from the time of Hallowell, who in 1759 recorded a suture of the brachial artery, to that of Salvia in 1902.

In 1772 Asman made the first experimental animal study, using the crural artery of the dog. Then a hundred years elapsed before further work was done, Gluck in 1881 presenting an inaugural dissertation in which he cited experiments made on large dogs and rabbits with such large vessels as the aorta. Though failing to accomplish his purpose the research stimulated Portenski, who in 1886 published an account of his work, which was, however, still unsuccessful. In 1888 v. Horroch succeeded in suturing the femoral of the dog, and Jassinowski in 1899 recorded twenty-six experiments made on the carotids and abdominal aorta of dogs, calves, and horses, only four of which were unsuccessful. These sutures differed essentially from those preceding in that the intima was not punctured. For the perfect suturing of an artery Jassinowski demands asepsis, smooth edges of the wound, which must not be more than one-half the artery's circumference, and that the vessel be not too deeply buried.

Quickly following this work came that of Muscatello, Heidenhain, Silberberg, Dörfler, Murphy, and others, with varying success, but increasing our knowledge of conditions, technique, suturing materials, and so forth. Most prominently brought out is the fact that the smallest of needles and the finest of silk or gut with as perfect an asepsis as possible are necessary for a strong and complete union of the vessel walls.

So much work on the animal side nat-

urally led to the application of the knowledge gained to arterial wounds in the human subject. Accordingly, between the years 1896 and 1902, we find seventeen surgeons reporting twenty-one cases—seven wounds of the axillaris, five of the femoralis, three each of the poplitea and brachialis, and one each of the common iliac, common carotid, and the internal carotid. These wounds were almost exclusively due to operation. Though varying widely in technique, sutures, etc., the results attained by these surgeons justify the conclusions reached from the purely animal work: namely, that for successful suturing the essentials laid down by Jassinowski must be strictly followed, and the needle and silk, or gut, must be very fine.

The greater number of sutures recorded were made with fine silk and were continuous. That the intima should not be included in the stitch is the opinion of Jassinowski and Burci, while the contrary view is held by v. Horroch, Murphy, Dörfler, etc. For provisory bleeding pressure is preferred.

Schmitz discusses the methods of Murphy and of Payr for the invagination of the artery, citing their own experiments and those of others on both animals and men. Which is the better procedure he does not decide, but concludes that invagination is a practicable and justifiable procedure in arterial section or disease.

Correspondence.

LONDON LETTER.

By George F. Still, M.A., M.D., F.R.C.P.

Scarcely a week goes by without fresh records being made of cases treated by the *x*-rays, or by one or other of the methods of phototherapy. The majority of these are either cases of rodent ulcer or of lupus, but recently Dr. Whitfield showed at the West London Medico-chirurgical Society a child who has been treated with *x*-rays for ringworm of the ordinary microsporon variety on the scalp. The result of thirteen exposures was to produce a clean bald patch where the ringworm had been, and within a few weeks from the commencement of treatment this area was covered by healthy hair. One can only hope that further experience may confirm this observation, for any method which promises success, even within two or three months, would be welcome in some of those intractable cases of ringworm in childhood where the condition seems to defy treatment by any of the ordinary methods. The use of the *x*-rays in ringworm seems almost a natural sequence of the already well-recognized success of similar treatment in favus.

Another disease in which light treatment has recently been advocated is trachoma, or granular lids. Mr. Mayou read a paper on this subject at the Ophthalmological Society; he had treated several cases successfully in this way after finding that the light caused no serious injury to the eyeball. The method has a great advantage over the use of copper sulphate, jequirity, or similar irritants, inasmuch as it is painless, and also produces less deformity of the eyelids. It would seem, however, that some patients react to the *x*-rays much less than others, so that it is not equally applicable in all cases.

The new Therapeutical Society continues to flourish, and several interesting papers have been read there. Mr. Peyton Beale showed a new method of effectually sealing operation wounds, so that healing might take place under aseptic conditions. The substance he uses is called velvril, a mixture of nitrocellulose with nitrated oil, soluble only in acetone. The velvril forms a transparent film which is impermeable to all ordinary liquids, and can even be sterilized in boiling water without undergoing any change which would interfere with its usefulness; it is moreover elastic, not hard, and therefore is easily adaptable. The velvril is kept in two forms, the film and the solution in acetone. The wound is thoroughly dried after suture, and then its margins for a distance of about one inch in every direction are moistened with the acetone solution of velvril; and finally the film, cut so as just to cover this area, is applied and kept firmly pressed against the part by a pad of sterile wool under a bandage. It will peel off by itself in about ten days, but it can always be removed by moistening it with a damp cloth for a few minutes.

At the same meeting a paper on the dangers of hypnotics was read by Dr. Tirard, and although this has been published since I think I may well refer to it here, for it dealt with some very important practical points. He laid stress on the necessity for treating the cause of the sleeplessness, not merely the symptom itself, and actually went so far as to say that in many cases "sleeplessness is perhaps the least important factor to be considered." After referring to various cases in which toxic symptoms had resulted from the use of hypnotics—for instance, in one case where the patient had taken nearly 250 grains of sulphonal on two consecutive nights, and as a result was comatose for a week—he drew attention to what he considered the greatest danger of all, namely, the giving of prescriptions for hypnotics to patients themselves. I imagine that most of us have seen harmful results from this indiscreet entrusting of prescriptions to patients. Even a mixture which is perfectly harmless in itself and suited excellently to the immediate needs of the patient may be anything but harmless when it is obtained again and again from the drug store without any medical supervision, under the impression that what suits one ache or pain must equally well suit another; and as Dr. Tirard says, the patient who is armed with a prescription for medicine which procures him sleep, is likely enough to go on dosing himself therewith long after the pressing need has disappeared, and may contract a drug habit with disastrous results.

We have heard much recently of the mouth as a *fons et origo* of various morbid conditions, and there can be little doubt that septic absorption with injurious results to the general health is more common than has hitherto been suspected. Dr. Macnaughton-Jones has recently insisted on the importance of attention to the mouth and teeth before and after operations upon the pelvic viscera. After such operations he has seen gastric complications and foul conditions of the mouth, and sometimes inflammation both of the parotid gland and of the cellular tissue in the neck, all of which he thinks might have been avoided by proper care of the teeth and mouth. Such complications not merely hinder recovery, but may even lead to a fatal result, as in one case where a woman operated upon for cystocele accompanying uterine prolapse and hemorrhoids developed a septic parotitis after the operation and died. The mouth and teeth should be disinfected before and after these gynecological operations, and preparations of formalin, sulphurous acid, hydrogen peroxide, or boric acid have been found useful.

The anesthetists have recently been sitting in judgment on the merits of the new preparation "somnoform," a mixture of ethyl chloride 60 parts, with methyl chloride 35 parts, and ethyl bromide 5 parts. The advantages claimed for it are principally two, namely, rapidity and safety. Anesthesia can be induced in twenty seconds, and there are said to be no ill effects either at the time or afterward. It seems to have been used chiefly as a substitute for "gas" in dental operations. Several speakers took part in the discussion, and all were agreed that it was by no means free from disadvantages. More than one case was mentioned in which fainting and serious collapse followed its use. In a boy of seven years, who was kept under its influence for twenty minutes with 18 cubic centimeters of the somnoform, there was severe collapse for six hours afterward. Several cases also had vomited after it, and some had complained of severe headache subsequently. It has, moreover, a very unpleasant smell, and lastly, is more expensive than the ordinary "gas." To my mind not the least interesting speech at the meeting was that by Dr. Dudley Buxton, who sounded a note which might well be sounded in other departments of medicine, by protesting against the use of such fancy and misleading proprietary names as "somnoform," "narcotile," etc. For quack "nostrums" such names may be suitable enough, but they are hardly consistent with the dignity of a scientific profession.

There is little to record this month in the wider domain of medical interests in London. The question of redistribution of hospitals has caused considerable ferment in certain lay papers, and no doubt there is something to be said for the migration of some of the present institutions to the more suburban parts, whither the poorer population is tending to migrate.

But so far no hospital has been bold enough to decide upon such a step, and any one who knows the difficulties, financial and otherwise, which it would involve, can hardly wonder if the hospitals look carefully before they leap.

MALARIA SOMETIMES NOT DUE TO MOSQUITOES.

To the Editor of the THERAPEUTIC GAZETTE.

SIR: In presenting my views on this subject I do so in the hope of stimulating investigations in certain directions; not that I disregard *in toto* the recent discoveries of Koch and others, but in my judgment there are many factors quite as important, more correctly speaking "clinical features," which cannot be discarded, and which are worthy of consideration in recounting the causes and development of malaria.

In my opinion the medical profession is too prone to accept theories and mere statements, discarding clinical features as worthless. It is not my desire to place even a straw in the path of investigation, but on the contrary I would advocate continued study and research in all of its peculiarities until a thorough and absolute knowledge of its different modes of transmission and development are understood. Then we shall have mastered one of the important subjects that have played such a prominent part in the medical world in the last few years. Malaria, as we know, is a disease peculiar to certain localities, and is more prevalent during the spring, summer, and early fall, sustaining in a measure the mosquito theory, as that is the period of activity of this malaria-producing insect. There are also other potent and convincing facts that tend to strengthen their views, such as the production of typical forms of this disease from bites of infected mosquitoes in subjects previously healthy, and who lived in countries free from this trouble.

This experiment has been demonstrated by Manson in England, and is strong evidence, but it does not prove that, as contended, it is the only means of producing this disease.

These investigators, who have devoted so much time and study to that particular feature of the disease, have overlooked certain clinical facts which are also quite convincing and cannot be banished with a word. These features I will relate as they have occurred in my practice; but I trust, however, in reviewing them you will not use the argument advanced by a member of the American Medical Association last week before the section on general medicine, when he said that "much of the malaria reported from the rural districts was in truth typhoid, and was due to the inability of the country doctor to differentiate between the two diseases." While this statement may or may not be true, it certainly proved nothing, and was so lamentably discourteous that I shall not dignify it with further notice.

I have been raised in a malarial country, and since my graduation in medicine I have practiced in the low lands of this State, the portion commonly known as the "delta," and as nearly three-fourths of my practice has been malaria in some form, I feel that I am in a small degree qualified to express an opinion concerning some of its "clinical features," which are many and varied.

First, I shall take a form of this disease which manifests itself by annual returns, a periodicity not heretofore mentioned, but which undoubtedly does exist. After seven years of careful study I have been able to isolate certain cases of annual recurrence—occurring each year at about the same time, the clinical aspect being the same. These cases in different subjects occur in different months. I have what I call my May cases, my July cases, and my September cases, and for five years they have developed within a week or ten days of the same time each year. They are of only moderate severity, and are generally up and about in from thirty-six to forty-eight hours after the onset. These cases are each subjected to the same influences the year through, and there is no reasonable explanation of this peculiarity other than an individual idiosyncrasy or a power to resist the invasion and development of the malarial poison up to a certain stage.

I have been unable to connect the Anopheles with these cases in the remotest degree; I have looked for local causes in each case, such as temporary accumulations of water in which the mosquito

might breed, but in each instance I have found nothing. Their surroundings are as healthful as could be, as they are all men in the higher walks of life, and who enjoy all the blessings dependent on financial success, which eliminates a lowered state of health from poverty; and again, the perfect health of the members of each family during these years removes the possibilities of local causes, such as mosquitoes and so on, and forces us to conclude that it is individual rather than atmospheric or local.

Dismissing this, I will take up one of the most important causes in the production of malaria, and one that has received very little attention by the profession, notwithstanding its great importance and universal employment—drinking-water. I am unable to furnish very extensive proof in the development of malaria from impure drinking-water; I have, however, one notable case which I will present, as follows:

Patient, previously healthy, moved to a plantation on which the only supply of drinking-water was from a driven well about 24 feet deep. Patient drank freely of this water for several days, when he began to feel sick, and soon after developed a chill followed by fever, which yielded promptly to treatment, but was again stricken on resuming active life and drinking from the well—this time the attack was more severe and more resistant to medicine. We suspected the water, and the patient supplied himself with a better source, whereupon he remained well; but in order that we might have proof positive he was induced to drink again from the well, which was followed by another chill. He remained well for years after. Thus it is a clear case of water infection.

The last mode of development of this trouble is what I have termed latent malaria, and only develops when there is a lowered vitality dependent on bad and unhealthy surroundings, or where the vital forces are lowered by either accidents or other diseases, which render the patient unable to resist its invasion.

It is my belief that there is ever present in the subject living in a malarious district a form of latent infection, that in health they are able to hold in a dormant state, but which will immediately manifest itself when the vital forces are lowered by either of the above causes. Such cases have occurred so many times that I have classified them as cases of latent infection. I will mention three cases that have developed within the last twelve months:

CASE I.—Previously healthy white male, aged twenty-nine, contracted mumps. Complications set in, requiring patient to take to his bed. Two days later there was headache, aching of limbs, and general discomfort, followed by a chill and subsequent fever. It responded quickly to treatment, and patient has enjoyed perfect health since.

CASE II.—Previously healthy male, aged fourteen; also had mumps, contracted while away from home at school. After the subsidence of the enlarged glands he came home and developed complications, which forced him to bed. Two days later a distinct malaria developed, lasting about five days. Patient has remained well since—some six months.

CASE III.—A previously healthy negro male, aged twenty-four, sustained a fracture of both bones of the leg. Just four days later a malarial fever of the remittent variety was developed. It lasted only a few days under treatment, and patient has remained well ever since.

In conclusion, I will state that in my classification of the causes of malaria, I have left out the mosquito, not that I do not accept it as a possible source of infection, but that there are other sources of infection which are equally as important, but which have been neglected, the best evidence of which is that the Anopheles is known to thrive abundantly in certain countries free from malaria, and conversely, malaria is known to exist in certain sections free from Anopheles.

Yours truly,

P. L. BELLENGER, M.D.

WATERPROOF, LOUISIANA.

[We have published this note for the sake of fairness, but we disagree with the author, believing that the fallacy in his reports as to the influence of season and water lies in the fact that he has not proved his cases to be malarial by examining the blood and finding the parasite.—ED.]